

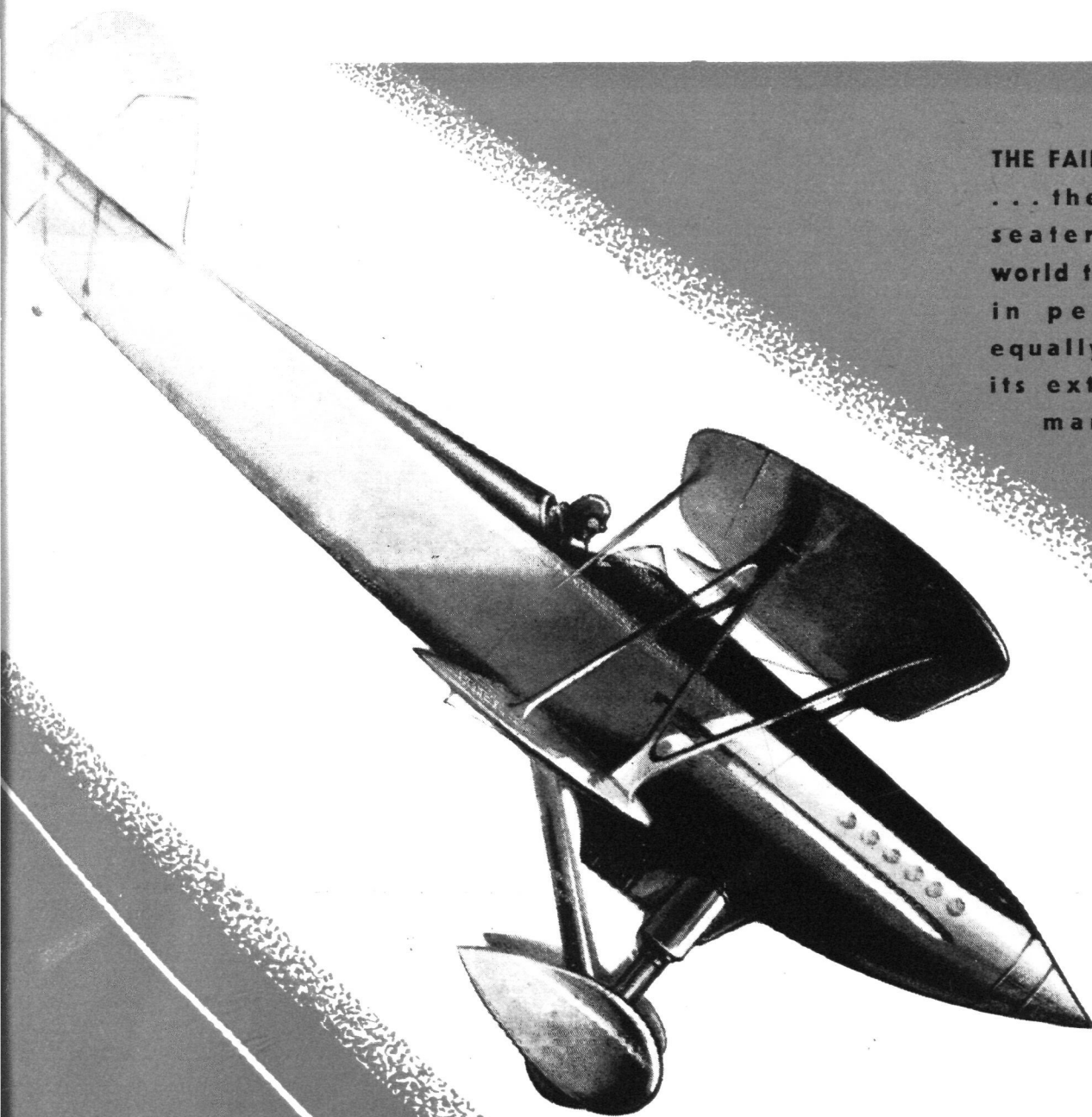
FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

OFFICIAL ORGAN OF THE ROYAL AERO CLUB

SIXPENCE
EVERY THURSDAY

1281
XXV
28



THE FAIREY "FIREFLY" MK.II.
... the premier single
seater fighter in the
world to-day, unsurpassed
in performance and
equally remarkable for
its extreme and ready
manœuvrability

FAIREY

FLIGHT
JULY 13, 1933.



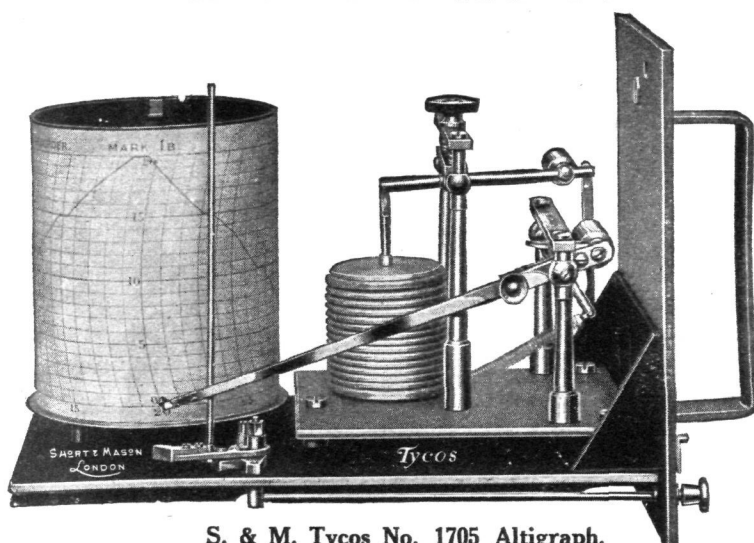
"Bristol"
BULLDOG
DAY AND NIGHT FIGHTER.

Designed and Constructed by

THE BRISTOL AEROPLANE CO., LTD.,
FILTON - - - - - BRISTOL.

Kindly mention "Flight" when corresponding with advertisers.

S. & M. AVIATION INSTRUMENTS



S. & M. Tycos No. 1705 Altigraph.

Illustration shows the instrument without covering case. Supplied in various calibrations.

Aviation Catalogue on application.

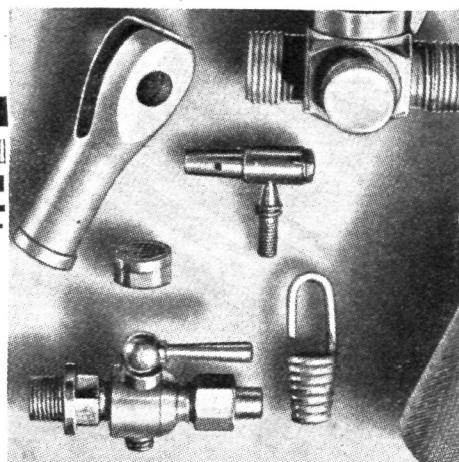
SHORT & MASON LTD

Aviation Meteorological Instrument Manufacturers.

WALTHAMSTOW, LONDON, E.17.

'Phone : Walthamstow 0708-0709.

Cables : Aneroid, London. Telegrams : "Aneroid, Phone London."



SATISFACTORY SERVICE

By reason of our large and varied stock we are able to maintain a quick and efficient service. Prompt delivery can be given of all standard fittings and special-machined parts.

STOCKS INCLUDE

Steel and Duralumin Nuts and Bolts, Mild Steel, Stainless Steel, H.T. Pins, Low Pressure Unions, Aero Fabrics, etc.

Brown Brothers Limited

GREAT EASTERN STREET
LONDON E.C.2

VICKERS' DURALUMIN

Light
AS
ALUMINIUM—
Strong
AS
STEEL.

MANUFACTURED IN
RODS, TUBES,
FORGINGS,
WIRE, STRIP,
SHEETS,
SECTIONS,
STAMPINGS,
etc.

ALSO "Y" ALLOY, ELEKTRON & WROUGHT
LIGHT ALLOYS TO ANY SPECIFICATION.

JAMES BOOTH & Company (1915) Limited
Telephone : EAST 1221
ARGYLE STREET WORKS, NECHELLS, BIRMINGHAM, 7. Telegrams : "BOOTH, BIRMINGHAM."

Save time by using the Air Mail.



THE KING'S CUP RACE
AGAIN WON
WITH A
FAIREY
METAL AIRSCREW

★ 35 COMPETITORS
25 FAIREY METAL
AIRSCREWS, WITH
100% RELIABILITY

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport
OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1281. (Vol. XXV.) 25th Year.
No. 28.

JULY 13, 1933

Weekly, Price 6d.
Post Free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.
Telephone: (2 lines), Holborn 3211 and 1884.
Telegrams: Truditur, Westcent, London.

Subscription Rates, Post Free.

UNITED KINGDOM		UNITED STATES		OTHER COUNTRIES	
	s. d.		\$		s. d.
3 Months ..	8 3	3 Months ..	\$2.20	3 Months ..	8 9
6 " ..	16 6	6 " ..	\$4.40	6 " ..	17 6
12 " ..	33 0	12 " ..	\$8.75	12 " ..	35 0

CONTENTS

PAGE

Editorial Comment :	
The King's Cup	683
The King's Cup	685
Airisms from the Four Winds	699
Air Transport	701
The New Avro Cadet	702
From the Clubs	706
Egyptian International Meeting	708
National Physical Laboratory	708
Airport News	709
The Air League	710
The Industry	711
Book Reviews	712
Royal Air Force	713
Handley Page, Ltd.	714

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list :—

1933.
July 15. Close of R.A.F. Athletic Championships, Uxbridge.
July 14. R.N. Flying Club Annual General Meeting, at R.U.S.I., Whitehall, 6 p.m.
July 15. Herts and Essex Ae.C. Meeting at Broxbourne.
July 16. Yorkshire Trophy Race, Sherburn-in-Elmet.
July 17. International Rally, Dieppe.
July 22. Official Opening of Maidstone Airport and Ae.C.
July 22-23. Cinquè Ports Club Flying Meeting.
July 22. Cardiff Ae.C. Annual Air Pageant, Splott Aerodrome.
July 22-24. International Rally on the Belgian Coast.
July 24-28. Lawn Tennis: R.A.F. Championships, Hurlingham.
July 26. Inter-Services Athletic Championships, Portsmouth.
July 31-Aug. 1. Lawn Tennis: Inter-Services Championships, Wimbledon.
July 31-Aug. 4. Lawn Tennis: Airmen's Championships, Halton.
Aug. 5. Maidstone Ae.C. All-Women's Air Rally.
Aug. 7. Scarborough Ae.C. Flying Meeting.
Aug. 12. London-Newcastle Race.
Aug. 13-20. International Gliding Competition, Wasserkuppe, Germany.
Aug. 19-20. 5th Annual Canadian Air Pageant, St. Hubert Airport, Montreal.
Sept. 1-4. International Air Races and Gordon Bennett Balloon Race, Chicago.
Sept. 9. Kent Air Pageant, Maidstone Airport.
Sept. 9. Essex Aviation Display, Maylands Aerodrome, Romford.
Sept. 16. Bristol and Wessex Ae.C. Garden Party.
Dec. 18-24. International Rally at Cairo and Meeting of the F.A.I.

EDITORIAL COMMENT



VERY seldom in the history of air racing has there been a more popular win than that of Capt. Geoffrey de Havilland in the King's Cup on Saturday last. He is a veteran, though he is by no means an old man. In age he is in the early fifties, we believe, but during the war—and the war is not really so very long ago—it was believed that a man was too old for flying at 30. Perhaps an exceptional man, whose nervous system remained younger than his years, might continue to potter about in the air in some very foolproof machine, but as for racing—well, there, at any rate, youth must be served. Capt. de Havilland, however, has continued to race as well as to potter about in the air. Of course he races machines of his own design, and last Saturday he was racing to and from his own aerodrome. In fact, everything was as de Havillandish as it could possibly be. Had he remained aground to see a "Leopard Moth" win with Broad holding the stick, it would still have been a great day for "D.H."; but to pilot the winning machine himself and wipe the eyes of all the youngsters was a very unusual degree of triumph. As everyone unfeignedly likes "D.H.," everyone was delighted to see him win. As for the race itself, the form which it took was a drastic attempt by the Royal Aero Club to shake off the atmosphere of apathy which in recent years has been threatening to envelop this great annual event. Handicap racing cannot be intended to "improve the breed" of aeroplanes. It takes an event like the Schneider Contest to do that. Therefore it follows that one of the main objects of the King's Cup must be to stimulate interest in flying among the general public. We believe that that was stated to be one of the objects for which His Majesty presented his first cup in 1922. For the last few years the racing has not been very exciting, and even the journalists who have described it have had to draw on their imaginations (always a difficult task for a journalist) to make the public who did not go to see it believe that it was a "thrilling" event and a "tense air drama!"

This year the Royal Aero Club decided to drop the circuit-of-Britain idea, in which it usually happened that an unwieldy number of entrants was reduced to manageable proportions before the finish by faulty navigation, and other mishaps, minor and major. They decided to weed out the field themselves by flying the race in a number of fairly short rounds, with so many heats to each round. Thus it was intended to keep up the interest all day by providing 13 separate races, all of which might have fairly close finishes, culminating in a final round of only eight machines, which should do two laps of an even shorter course and so show up twice on the home aerodrome.

The general opinion is that the new arrangement was a pronounced success. All the organisation concerned with starting the machines off on the various heats was as good as it could be. There were some fairly close finishes in early heats, and the final really almost excused those journalists who may have described it as thrilling. We are definitely of the opinion that the plan of rounds and heats should be repeated in future years. It is a good plan as a basis for further improvements. Certainly further improvements can be made, and should be made, if the race is to fulfil the purpose for which we believe that the King gave his cup.

In the first place, if the race is to be held in the London area, the committee should make sure that the date fixed for the race is not the same day as the finals at Henley and Wimbledon. It is impossible to judge how many people would have come to see the King's Cup if they had not been attracted elsewhere by contests which are bound to be more spectacular than long-distance air racing. If the aeroplanes merely raced round pylons, as in old days, air racing could hold its own even with dirt-track racing, but that means risk of collisions, and we have unhappy memories of a certain meeting at Bournemouth. As it was, on Saturday a very great number of cars arrived at Hatfield, but they did not seem to disgorge a very large crowd of people. It was noticed that a very considerable number of the cars turned up at the time when the final heat was likely to be starting. That is significant. The early rounds had only a limited interest, but the final showed promise of becoming a really popular event, if the committee will only observe the signs and take action on them. A suggestion has even been made in some quarters that the preliminary rounds should be worked off on a previous day, on which the public would not be expected to attend, while the final might be made the big event of a second day which should be a real festival of flying.

We cannot say that this idea appeals to us. For one thing, as the King's Cup comes not long after the R.A.F. Display, any flying exhibition which might be got up to pad out the interest of the cup final, would be bound to suffer by comparison with the Display, and, in fact, would not attract many people to the aerodrome. We prefer another suggestion, to the effect that the preliminary rounds could be made more attractive if the course for each heat were more or less star-shaped, with the machines coming back two or three times to round pylons on the aerodrome. On Saturday the double lapping of the short course did make a very interesting spectacle. This might be developed. In any

case, pains should be taken to announce beforehand the time at which the final heat will start, and this time should be rigidly adhered to. A considerable number of people will evidently drive out to see an exciting final lap, though they may not feel inclined to spend a whole day on the aerodrome—at least if the preliminary heats are to be as unspectacular as they were last Saturday.

A better suggestion is that the heats of the first round only should be flown off on the day before. When the results of the first heats were in, we suggest that some care should be expended in arranging the machines in the heats of the second round, so that the same pilots should not race against each other in successive rounds. It would also be a good plan to "seed" pilots who had made up on their handicaps in the first round. These "seeded" pilots could be distributed among the heats in the second round, to improve the chance of a good final. As each pilot would naturally want to be "seeded," he would try to win his first heat and would have no temptation to spare his engine by scraping home in the fourth place.

The most important alteration which we wish to suggest is that the race should not, as a rule, be flown in the London area. It has been abundantly proved that the London public will not come to see such racing as the King's Cup has hitherto provided. On the other hand, the great cities of the Midlands and North, Birmingham, Manchester, Leeds, Newcastle, Glasgow, and others have shown that large crowds will go out to aerodromes to watch the machines arrive and depart. Perhaps the enthusiasm is less now than it was in 1922, but still those cities have shown an enthusiasm which London has never displayed. The wisest policy, we feel sure, would be for the Aero Club to take each of those great cities in turn and hold the King's Cup there, making it as attractive as the heat-and-round system, with more appearances over the aerodromes, can make it. Let us leave the blasé Londoner to his own manifold devices. If the King's Cup is held at Manchester, then it would not matter if the date did clash with the finals at Henley and Wimbledon. Once the Cup was flown at Hucknall Torkard, and a large crowd attended. Why was this plan dropped? Still greater interest can be expected further north. Liverpool has just celebrated the opening of its municipal aerodrome, and that city would surely feel it a great compliment if the next King's Cup were to be flown there. There is much healthy rivalry among some of the Northern cities, and whichever were chosen as the venue for a particular year would be sure to do its utmost to display greater interest than its rivals had shown.

We think it our duty to voice one "grouse" of a more or less personal nature. On Saturday at Hatfield the arrangements for the convenience of the Press were not conspicuously good. This probably mattered less to the members of the staff of FLIGHT than to the representatives of daily papers, who, after all, with proper facilities, help to spread the gospel of flying. In most previous years the Press Stewards have been most helpful in obtaining for the journalists all the information which they could desire. This year it is a little surprising that the King's Cup race received any worthy showing in the daily Press.

THE KING'S CUP RACE, 1933

RESULT

First : Capt. G. de Havilland, D.H. "Leopard Moth," (Gipsy Major) ..	m.p.h. 139.51
Second : Fl. Lt. E. C. T. Edwards, Comper "Swift" (Pobjoy) ..	126.89
Third : A. J. Styran D.H. "Leopard Moth" (Gipsy Major) ..	138.50

Total Distance 830.8 miles.

As one spectator put it, this year's King's Cup Air Race was rather like a day's fishing, as far as the general spectator was concerned. A pleasant day placidly spent in the open air was punctuated by occasional moments of mild excitement. But of intense interest, finishes "by a spinner," catching up on the finishing line, and so forth, there was, it is to be feared, little to keep the ordinary spectator on his toes. Writing from memory and without consulting notes made at the time, but three instances remain in one's mind: Hope nearly catching Lowdell in Heat 10, Round II; Campbell Black just overtaking Westenra in time to finish fourth in Heat 7 of the same round; and the actual finish of the race, when the "head-on" position in which one saw the machines approaching made it all but impossible to tell who was leading, de Havilland or Edwards. If 12 hours spent on an aerodrome watching the racing leaves but three such impressions on one's memory, the comparison with a day's fishing cannot be entirely discounted. And now let us turn to our notebooks, programmes, copies of last week's issue of FLIGHT, and every other source of information from which a true picture of the 1933 King's Cup Race may be built up.

The first heat of the first round was due to start at 8 a.m., but beyond that fact the Royal Aero Club had not permitted any information to be issued before the race.

One did not know how many machines were to be allocated to the various heats, nor which particular machines were to be put into heats together. At one time it was rumoured that the requisite number of competitors would simply be taken from the list, starting at the top of the table as published in FLIGHT last week. This would have meant having all the slowest machines in the first heat, the not-quite-so-slow in the next heat, the slightly faster in the next, and so forth. This arrangement was, however, abandoned, and substituted for it was a peculiar shuffle with no very obvious reason behind it. The fairest way would have been to let competitors draw lots for the heats in the first round, but apparently this was not done either. One must, therefore, assume that a somewhat haphazard method was employed. The final scheme resolved itself into six heats in the first round, four heats in the second round, two heats in the third round, and the final, giving a total of 13 separate races. Theoretically there should have been thirteen close finishes. In actual fact the number was very much smaller.

There were very few last-minute changes in the handicap allowances published in FLIGHT last week. In one or two instances the entrant's and the handicappers' interpretation of the word "fairing" did not quite coincide, and a slight readjustment took place. Sometimes this would take the form of the removal of the fairings. In



BEHIND THE RAILS : Our view shows a small section of the large and enthusiastic crowd which gathered at Hatfield to see the King's Cup Race on July 8. (FLIGHT Photo.)



PALMAM QUI MERUIT FERAT : On the left at the top Capt. G. de Havilland is seen crossing the line to win the King's Cup Race in his latest production, the "Leopard Moth" ("Gipsy Major"). As a pioneer and the "old man" of the de Havilland Aircraft Co., Ltd., his popularity is great, and the enthusiasm with which his win was greeted was very sincere indeed. His staff are loyal and support him on all occasions (as witness Flt. Lt. Reeve in the bottom left-hand corner, who is the Chief Instructor at Hatfield). On the right Capt. de Havilland receives from the hands of Lord Gorell the prize of victory.

other cases the handicap allowance was changed slightly. Incidentally, this led to one of the most amusing incidents of the race, when an irate competitor threatened to report the handicappers to Commander Perrin!

"Seconds Out"

Promptly at 8 a.m. Mr. A. G. Reynolds dropped his red flag for the first competitors to get away. They were: Mr. Sanders, on the Southern "Martlet" and Lt. Col. Strange on the Spartan "Clipper" ("Pobjoy"). Capt. Ayre, on the Desoutter monoplane ("Hermes II") was next, and was followed by Mr. Lipton on a "Gipsy Moth,"



LIGHT AND HEAVY: Left to right, Mr. C. C. Walker (Chief Engineer, de Havilland Aircraft Co.), Mr. F. Handley Page (in dark suit), Mr. F. T. Hearle (General Manager, de Havilland Aircraft Co., standing), Maj. F. B. Halford, designer of "Gipsy" engines. (FLIGHT Photos.)

Subject to official confirmation.

KING'S CUP AIR RACE SIDDELEY WON TROPHY

by
MR. A. HENSHAW
flying a Comper Swift (Pobjoy Engine)

using
NATIONAL
BENZOLE MIXTURE

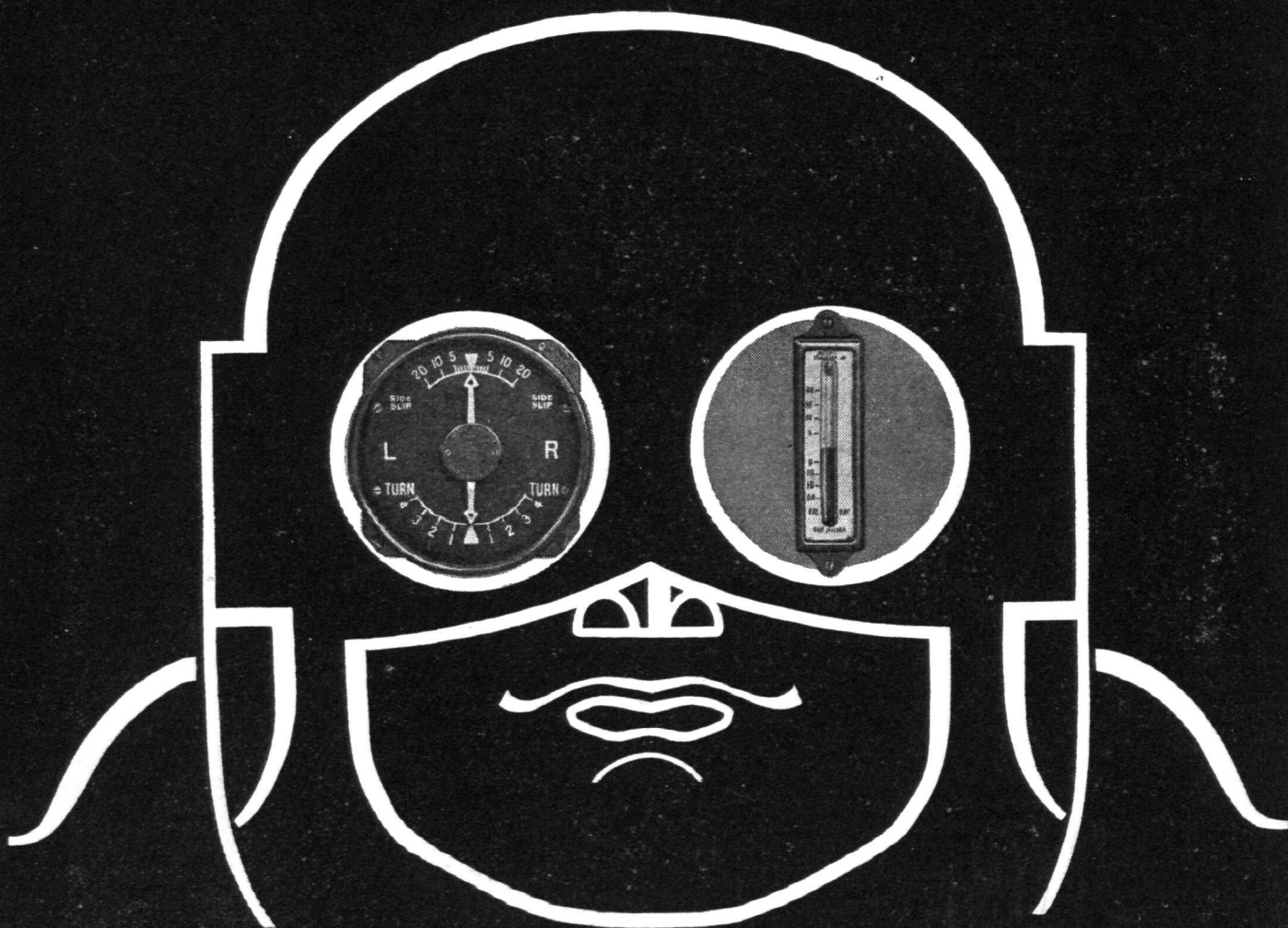
**British
and
'miles' better**



NATIONAL BENZOLE CO. LTD., WELLINGTON HOUSE, BUCKINGHAM GATE, LONDON, S.W.1
(The distributing organisation owned and entirely controlled by the producers of British Benzole.)

Save time by using the Air Mail.

THE NIGHT PILOT'S EYES



REID SIGRIST TURN INDICATOR AND REID PITCH INDICATOR

THE ROYAL AIR FORCE HAS STANDARDISED THE
REID-SIGRIST TURN AND PITCH INDICATORS . . .
THE GREATEST TESTIMONY TO THE RELIABILITY
OF THESE INSTRUMENTS.

REID & SIGRIST LTD.,
CANBURY PARK ROAD,
KINGSTON-ON-THAMES.

KLUSKA

Kindly mention "Flight" when corresponding with advertisers.

COMPETITORS IN THE KING'S CUP RACE, 1933

Racing No.	Registration Letters	Entrant	Pilot	Aircraft and Engine
1	G-AA YA	Lady Bailey	Lady Bailey	Puss Moth (Gipsy Major)
2	G-AB DF	E. W. Hart	Flt./Lt. A. Hattersley ..	Puss Moth (Gipsy III).
3	G-AB LS	E. Gandar-Dower ..	A. C. S. Irwin	Puss Moth (Gipsy III).
4	G-AB MD	Mrs. Doris Sale	A. M. Diamant	Puss Moth (Gipsy III).
5	G-AB VE	C. G. Grey	H. H. Leech	Arrow Active (Gipsy III).
6	G-AC GL	A. Henshaw	A. Henshaw	Comper Swift (Pobjoy).
7	G-AB IF	T. C. Sanders	T. C. Sanders	Martlet (Genet II).
8	G-AB OD	Sir William Morris ..	P. E. G. Sayer	Hawker Tomtit (Wolseley A.R.9).
9	G-AB AX	Sir William Morris ..	Flt./Lt. P. Bulman ..	Hawker Tomtit (Wolseley A.R.9).
10	G-AA SI	Sir William Morris ..	G. E. Lowdell	Hawker Tomtit (Wolseley A.R.9).
11	G-AC HA	Lt.-Com. Leake, R.N.	E. W. Percival	Percival Gull (Napier Javelin).
12	G-AC EG	Col. L. A. Strange ..	Col. L. A. Strange ..	Spartan Clipper (Pobjoy).
14	G-AC HJ	Wing-Com. H. Probyn	Wing-Com. H. Probyn	Miles Hawk (Cirrus III).
15	G-AB VW	L. Lipton	L. Lipton	Moth (Gipsy III).
16	G-AB LG	W. L. Runciman	W. L. Runciman	Puss Moth (Gipsy III).
17	G-AC GR	Sir Philip Sassoon ..	G. R. A. Elsmie	Percival Gull (Napier Javelin).
18	G-AB IX	Woolf Barnato	Flt./Lt. E. A. Healy ..	Arrow Active (Hermes IIB).
19	G-AA VT	C. S. Napier	C. S. Napier	Hendy 302 (Hermes IV).
20	G-AC GI	Flt./Lt. H. Schofield ..	Flt./Lt. H. Schofield ..	Monospar (Pobjoy (2)).
21	G-AB WH	S. A. Sadler	W. L. Hope	Comper Swift (Gipsy III).
22	G-AC FG	Lord Wakefield	H. S. Broad	Dragon (Gipsy Major (2)).
23	G-AC HD	Capt. G. de Havilland ..	Capt. G. de Havilland ..	Leopard Moth (Gipsy Major).
24	G-AC HB	A. S. Butler	Mrs. Butler	Leopard Moth (Gipsy Major).
26	G-AB UU	Viscountess Hardinge	Flt./Lt. E. C. Edwards	Comper Swift (Pobjoy).
27	G-AC BY	F. R. Walker	F. R. Walker	Comper Swift (Gipsy III).
28	G-AB WW	Sir Norman Watson ..	Flt./Lt. G. Stainforth ..	Comper Swift (Gipsy Major).
29	G-AC GP	AV-M A. E. Borton ..	AV-M A. E. Borton ..	Percival Gull (Napier Javelin).
30	G-AC HC	Sir Derwent Hall-Caine	A. J. Styran	Leopard Moth (Gipsy Major).
31	G-AB OF	M. D. L. Scott	M. D. L. Scott	Puss Moth (Gipsy III).
32	G-AC CW	Hon. R. Westenra	Hon. R. Westenra	Moth (Gipsy Major).
33	G-AA PZ	W. S. Stephenson	E. D. Ayre	Desoutter (Hermes II).
36	G-AB WE	R. O. Shuttleworth ..	T. N. Stack	Comper Swift (Pobjoy).*
39	G-AB JR	N. Kilian	R. Bannister	Comper Swift (Pobjoy).
40	G-AB UR	H.R.H. Prince George	Flt./Lt. J. Armour ..	Percival Gull (Napier Javelin).
42	G-AB YW	Viscount Furness	T. Campbell Black ..	Puss Moth (Gipsy III).

the same as that flown by Capt. Broad in last year's King's Cup Race, but with some of the fairings removed and a "Gipsy III" substituted for the "Gipsy Major." The last two machines in this heat were a "Moth" ("Gipsy Major"), piloted by Mr. Westenra, and a Comper "Swift" ("Pobjoy") piloted by Mr. Bannister. All got away well, and the fight for the King's Cup was on in real earnest. The results are shown in detail in a table. Capt. Ayre appeared unexpectedly early, while some of us were trying to snatch a belated breakfast, and several portions of bacon and eggs were left on the tables of the club in case others should prove as far ahead of their expected time as was Ayre. He had covered the course at a speed of 117 m.p.h., which was very good for a three-year-old machine like the Desoutter, which has been used on taxi work by National Flying Services. The "Hermes II" engine was "revving" manfully, and altogether it looked as if the Desoutter might do surprising things. The machine had had some airship-shape fairings placed over the junctions of the wing and undercarriage struts to the lower longerons of the fuselage, and a windscreen of Capt. Ayre's own design had been fitted. Otherwise it was quite standard.

Heat 2.—In the meantime the machines in the second heat of the first round had been sent off. Limit man in

this heat was Mr. Miles on the "Hawk" ("Cirrus III"). This machine was flown as a single-seater, with the front cockpit neatly covered in. The machine was fitted with Dowty telescopic struts, and this caused the hand-cappers to put it back a little. However, Mr. Miles was not worrying overmuch, as he was confident that he still had enough in hand to stand a fair chance in the race. Scratch in this heat was Flt. Lt. Healy on the Arrow "Active" ("Hermes II B."), and in between them started Capt. Neville Stack, who had taken the place of Mr. Shuttleworth in a Pobjoy-engined Comper "Swift," Flt. Lt. Edwards in a similar machine, Mr. Campbell Black in a "Puss Moth," and Mr. Runciman in his "Puss Moth." The surprise of this heat was provided by Flt. Lt. Edwards, who completed the course so fast that he actually crossed the finishing line at Hatfield before some of the competitors in the first heat. At first this looked startling, but ultimately it was found that what had happened was that two of the competitors in Heat 1 had dropped out, Lipton owing to his airscrew breaking and Sanders for some reason not known, while Col. Strange on the "Clipper" was so slow that he was overtaken by several machines of Heat 2, and thus had, as he himself put it, the fun of two races in one.

Those who qualified in Heat 1 for going into the second round were Ayre, Westenra, Bannister, and Strange. In Heat 2 the four who qualified were: Edwards, Campbell Black, Runciman, and Stack.

Heat 3.—Limit man in Heat 3, in which there were but five competitors owing to the fact that Watson, Jackaman, and Allen were non-starters, which gave 35 starters, was Mr. Henshaw on a Comper "Swift" ("Pobjoy"). He was followed by Irwin on Mr. Gandar-Dower's "Puss Moth," Scott also on a "Puss Moth," Lady Bailey on a similar machine, and Capt. Broad as scratch on Lord Wakefield's "Dragon"

(two "Gipsy Majors"). Broad was first home in this heat, and was followed in turn by Henshaw, Irwin, and Lady Bailey. Mr. Scott ran out of petrol and had to land. The time lost automatically eliminated him.

Heat 4.—The types of aircraft placed in the fourth heat were: two of the new De Havilland "Leopard Moths" (Gipsy Major), two "Puss Moths" (Gipsy III), one Arrow "Active II" (Gipsy III), and one Hawker "Tomtit" (Wolseley A.R. 9). The "Leopard Moths" were piloted by Capt. De Havilland, Capt. Styran and Mrs. A. S. Butler, respectively. The two "Puss Moths" were flown by Flt. Lt. Hattersley and Mr. Diamant, respectively, and the "Tomtit" by Mr. Sayer. Hattersley started as limit man and Sayer was scratch in this heat. The new "Leopard Moths" were naturally a centre of interest, as this was the first time they had been seen in public. Generally speaking, they resemble the "Puss Moth," which they are intended to replace, but the wings have a considerable taper, and the undercarriage struts, which in the "Puss Moth" run to the junction of wings and fuselage, are taken to a point down the side of the cabin. This has resulted in a shortening of the telescopic struts, but because of the wide wheel track this is accompanied by a rather pronounced angle, which must impose considerable loads on the internal cross-member of the



7 Martlet



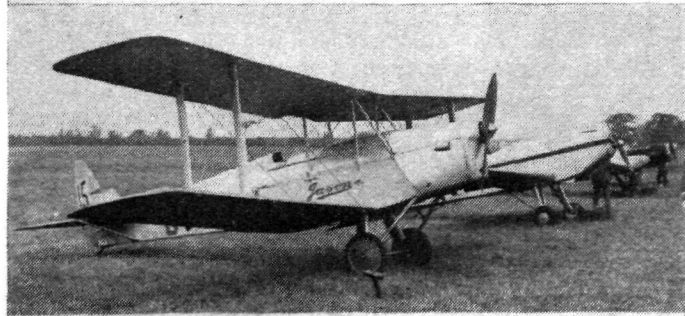
12 Spartan Clipper



14 Miles Hawk



33 Desoutter Mark I



15 D. H. Moth

THE COMPETITORS: The machines in the race are shown above and on the following pages, in order of handicap. (FLIGHT Photos.)

THIRD HOME: Mr. A. J. Styran, flying Sir Derwent Hall-Caine's "Leopard Moth" ("Gipsy Major"), crossing the finishing line. (FLIGHT Photo.)

fuselage. The pilot sits in front and the two passengers, side-by-side, behind him in a sofa seat. It was noticed that Styran's machine had a "spectacle" grip type of control. Mrs. Butler's Gipsy Major was fitted with a Fairey adjustable pitch airscrew, and the fact that the pitch of this was adjusted for the final raises the point whether such adjustment after the start of a race is strictly speaking permissible.

The "Tomtit" flown by Sayer was examined with interest, because it was one of the three machines fitted with the new Wolseley A.R. 9 engine. This particular machine had the direct-drive engine, while those flown by Bulman and Lowdell had geared engines. A very small wooden airscrew was fitted.

Capt. de Havilland was first man home in this heat, having covered the course at an average speed of 140½ m.p.h. This was the first indication that "D.H." might be a possible winner, although Styran, who was second man home, had also been doing very well indeed. The other two to qualify for going into the second round were Leech, on the "Active II," and Hattersley, on a "Puss Moth."

Heat 5.—This was a somewhat heterogeneous mixture, consisting as it did of, in the order of handicap allowances, one "Leopard Moth," one Stieger Monospar ST. 6, one Hawker "Tomtit," one Hendy 302, one Percival "Gull," and one "Gipsy-Swift." Mrs. Butler was limit "man" in the "Leopard Moth," and right manfully she handled her machine. Mr. Walker was scratch on the "Gipsy-Swift." The Monospar machine, with its retractable undercarriage and its new style of cowling over the Pobjoy



SECOND MAN: Flt. Lt. E. C. T. Edwards in his Comper "Swift" (Pobjoy) waiting to get away in the final. He flew a remarkably fine race, winning each of his heats and ultimately running into second place. (FLIGHT Photo.)

Train on Siddeley 7-cyl. engines



**PORTUGUESE
AIR DISPLAY.**
Junkers Junior
aircraft fitted
with Siddeley
Genet Major
engines won
three out of
the four avail-
able prizes.

The
215 h.p.
LYNX

The 260 h.p.
CHEETAH
(Lynx Major)

The 140 h.p.
GENET MAJOR

PRACTICAL
experience
all over the world
has proved that the
present range of air-
cooled seven cylinder
Siddeley engines covers
the whole field of train-
ing requirements perfectly.

Avro Tutors (Lynx) in Formation.

ARMSTRONG SIDDELEY MOTORS LTD., COVENTRY, ENGLAND

BP295

Save time by using the Air Mail.



The
**SIDDELEY
TROPHY**

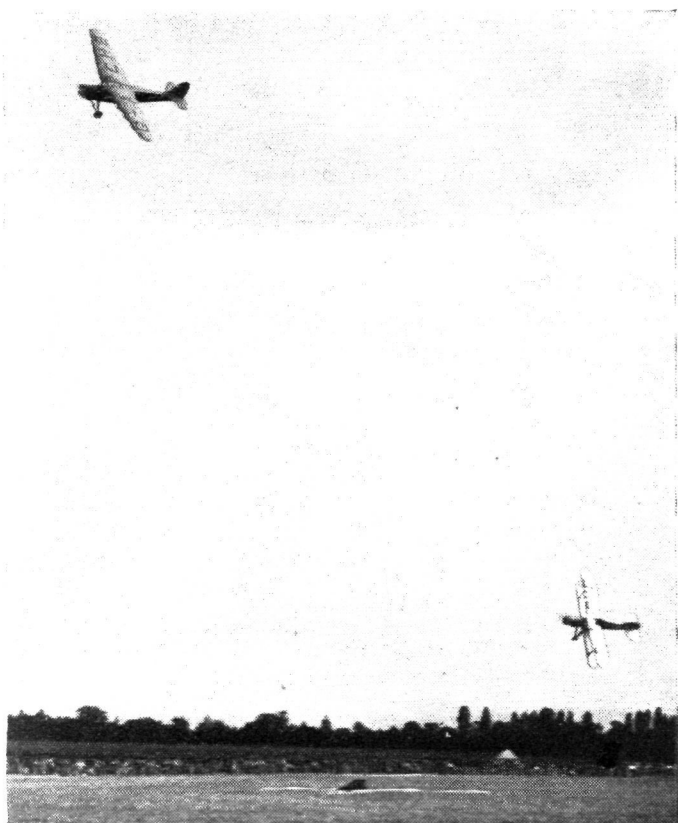
in the
**KING'S CUP
AIR RACE**

L A S T S A T U R D A Y

was won by A. Henshaw
Comper Swift (Pobjoy) using

WAKEFIELD
Castrol

The World's Fastest Oil



HIGH AND LOW : Mrs. Butler ("Leopard Moth") and F/O. Leech (Arrow "Active") taking the corner on the aerodrome at Hatfield in the middle of the final. (FLIGHT Photo.)

joy engines, looked a formidable opponent, and to make sure that expert advice was "on tap" at any moment, Mr. Stieger accompanied Mr. Schofield as passenger. The take-off was good, and as soon as the machine was in the air and had swung on to its course, the wheels were seen to disappear into the engine nacelles. The Hendy 302 looked very neat with its new cabin top, and the inverted Hermes IV engine obviously improved the view very much. However, the handicap was to prove too much



A FINE FLIGHT : Mrs. Butler, wife of the Chairman of the de Havilland Aircraft Co., Ltd., piloted a "Leopard Moth" ("Gipsy Major") with great skill throughout the Race. Mr. Butler was her navigator. (FLIGHT Photo.)



32

D. H. Moth



26

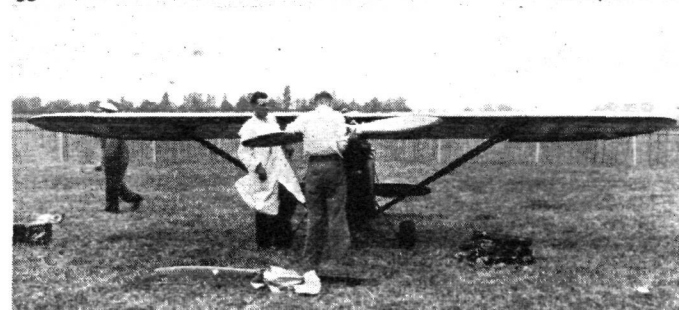
SECOND

Comper Swift



36

Comper Swift



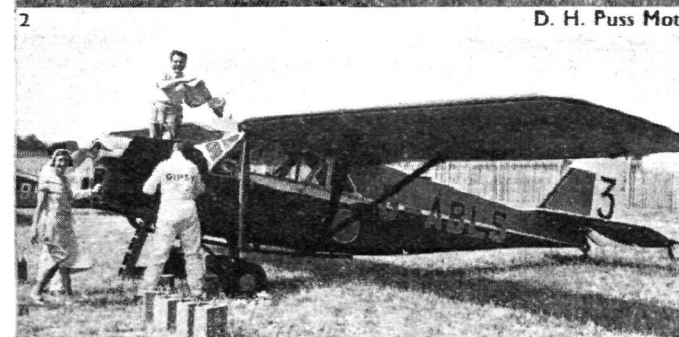
39

Comper Swift



2

D. H. Puss Moth



3

D. H. Puss Moth

(FLIGHT Photos.)



Comper Swift 42



D. H. Puss Moth

(FLIGHT Photos.)

ROUND 1, 223.8 miles.

Racing No.	Pilot	Handicap Allowance	Finishing Time.	Speed	Place
Heat No. 1	7 Sanders ..	min. sec.	hr. min. sec.	m.p.h.	—
	12 Strange ..	43 07	Retired	—	—
	33 Ayre ..	40 56	10 18 38	96.86	4
	15 Lipton ..	32 56	9 57 02	116.92	1
	32 Westenra ..	32 56	Retired	—	—
Heat No. 2	39 Bannister ..	31 06	10 00 42	121.50	2
	14 Probyn ..	38 50	10 11 21	112.52	3
	36 Stack ..	31 06	Retired	—	—
Heat No. 3	26 Edwards ..	31 06	10 15 36	121.12	4
	42 Black ..	27 36	10 10 14	127.28	1
	16 Runciman ..	27 11	10 13 20	127.76	2
	18 Healy ..	22 45	10 13 24	128.19	3
	6 Henshaw ..	27 36	10 16 46	129.50	5
Heat No. 4	3 Irwin ..	27 36	10 21 56	129.20	2
	31 Scott ..	26 46	10 22 28	128.54	3
	1 Lady Bailey ..	25 07	Retired	—	—
	22 Broad ..	24 19	10 24 06	129.59	4
	2 Hattersley ..	27 36	10 21 05	133.54	1
Heat No. 5	4 Diamant ..	27 11	10 31 15	128.80	4
	30 Styran ..	21 59	10 33 27	126.64	5
	23 de Havilland ..	21 36	10 28 48	139.61	2
	5 Leech ..	21 14	10 28 35	140.48	1
	8 Sayer ..	20 29	10 30 58	137.29	3
Heat No. 6	24 Mrs. Butler ..	21 59	10 45 46	120.27	6
	20 Schofield ..	18 19	10 37 48	135.91	1
	9 Bulman ..	17 37	Retired	—	—
	19 Napier ..	16 56	10 41 34	136.74	2
	17 Elsmie ..	6 49	10 47 06	130.30	5
Heat No. 7	27 Walker ..	4 56	10 42 01	152.85	3
	10 Lowdell ..	15 35	10 43 27	153.64	4
	29 Borton ..	7 05	10 58 36	137.58	2
	40 Armour ..	6 32	10 59 16	149.59	4
	11 Percival ..	5 28	10 57 51	152.94	1
Heat No. 8	21 Hope ..	3 23	10 59 30	151.93	5
	28 Stainforth ..	Scr.	10 58 54	156.69	3
				160.46*	6

* Fastest time in Round 1.



D. H. Puss Moth



D. H. Puss Moth



D. H. Puss Moth



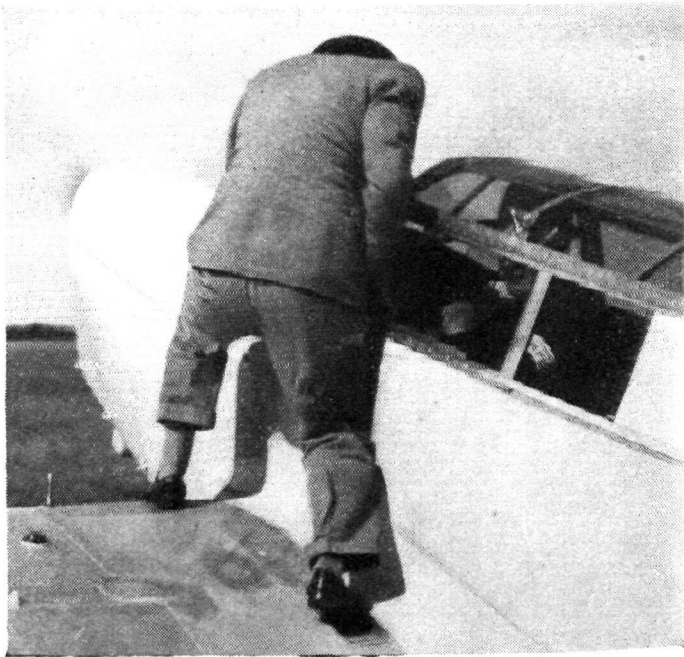
D. H. Puss Moth

(FLIGHT Photos.)

for it, and the 302 was eliminated in this heat, Walker, on the "Gipsy-Swift," beating it for fourth place.

The Percival "Gull," flown by F/O. Elsmie, had been entered by Sir Philip Sassoon, and was remarkable for an extraordinarily fine finish. The machine was, we understand, doped with Cellon.

Mrs. Butler managed to maintain her leading position, finishing first in this heat, Schofield dropped right out, having run out of petrol, so that Bulman moved up to second place. Elsmie, on Sir Philip Sassoon's "Gull,"



IN THE NICK OF TIME : The Napier "Javelin" engine of Mr. Percival's "Gull" was disinclined to start in Heat 6, but this strong man got it going as the flag fell.

KING'S CUP AIR RACE

Won by Capt. G. de Havilland
piloting a D. H. Leopard Moth, using

SHELL SPECIAL PETROL

(Subject to official confirmation)

Marvellous flight
..... I suppose
Shell supplied
the fuel

You bet
they did!

Save time by using the Air Mail.



Flight-Lieut. G. H. Stainforth in a Comper-Swift (Gipsy Major) made the fastest time of the day in the King's Cup Race.

AND NOW THE KING'S CUP...

Wherever a number of high efficiency aircraft are gathered together, there will be found, almost universally used, the Dope of Proved efficiency.

Following the recent R.A.F. Display at Hendon in which most of the participating aircraft were Cellon doped, now has the King's Cup again shown Cellon superiority. The majority of manufacturers of the competing aircraft standardise the Dope of Proved Efficiency.

BOTH THE AIRCRAFT RECORDING THE HIGHEST SPEED, FLIGHT-LIEUT. STAINFORTH'S GIPSY-COMPER, AND THE WINNER OF THE SIDDELEY TROPHY—MR. A. HENSHAW'S POBJOY COMPER, WERE CELLON DOPED.

Cerric Lacquers comply with D.T.D. Specifications for metal parts, cockpits, propellers. Particulars on application.

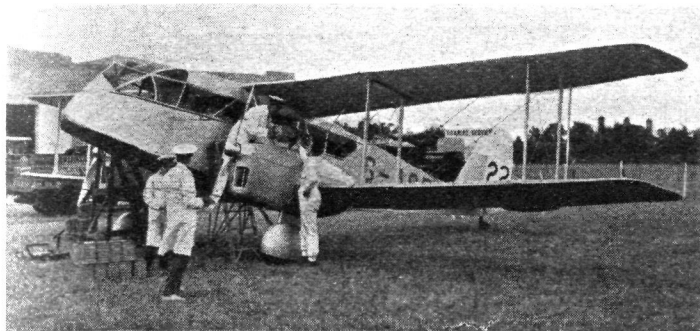
CELLON

CELLON LTD., Richmond Road, Kingston-on-Thames.
(Contractors to H.M. and Foreign Governments.)

Telephone:
Kingston 6061 (5 lines).

Telegrams:
"AJAWB," 'Phone, Kingston-on-Thames.

Kindly mention "Flight" when corresponding with advertisers.



22 D. H. Dragon



18 Arrow Active

(FLIGHT Photos.)

moved up to third place, having overtaken the Hendy 302, and Walker also overtook it, coming into fourth place. That eliminated the only Monospar and the only 302 from the race.

Heat 6.—The last heat in the first round appeared to have been reserved for the fast machines of the race, the limit man being Lowdell, on one of the Hawker "Tom-tits," at the other end being Stainforth, on the Coupe Deutsch Comper "Swift," with Gipsy Major engine, and



24 D. H. Leopard Moth



30 **THIRD** D. H. Leopard Moth

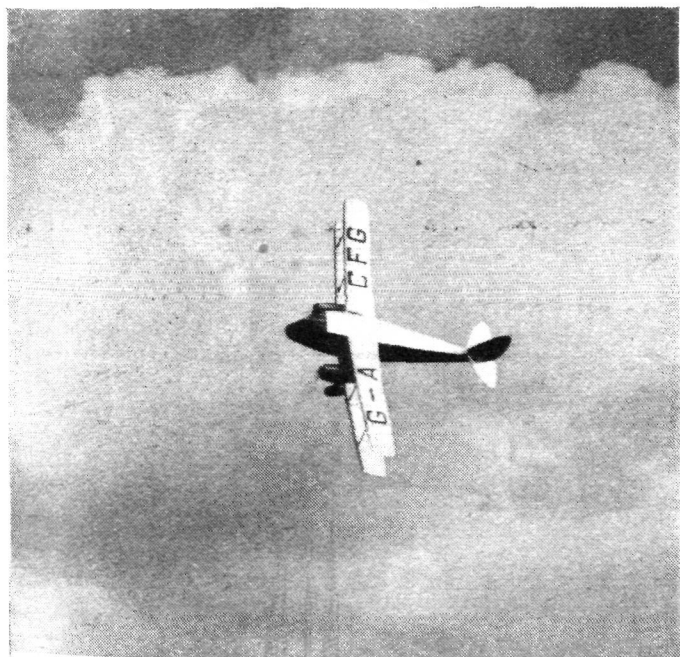


23 **WINNER** D. H. Leopard Moth



5 Arrow Active

(FLIGHT Photos.)



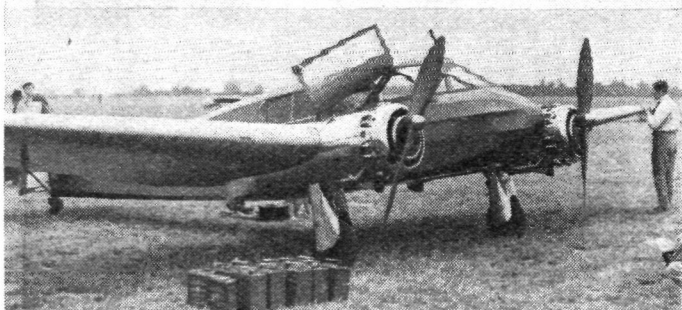
LARGE AND FAST : As it was the first time a "Dragon" had been raced its performance was watched with interest, and Capt. Broad's superb cornering (seen above) was as much commented on as were his quick circular take-offs.

(FLIGHT Photos.)

just in front of him Hope, on the Gipsy III-Swift, which was flown by Styran in last year's King's Cup. Stainforth's machine had been deemed by the handicappers to be the fastest machine in this year's King's Cup Race, and Hope had added a transparent celluloid roof over his cockpit, so that the machine was well streamlined, and it was thought that he might have "something up his sleeve." In between these three machines started Air Vice-Marshall Borton, on a Percival "Gull" (Napier



8 Hawker Tomtit



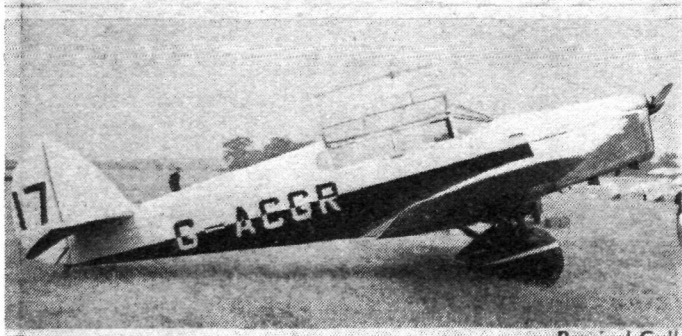
20 Monospar

9 See 8 Hawker Tomtit



19 Hendy

10 See 8 Hawker Tomtit



17 Percival Gull

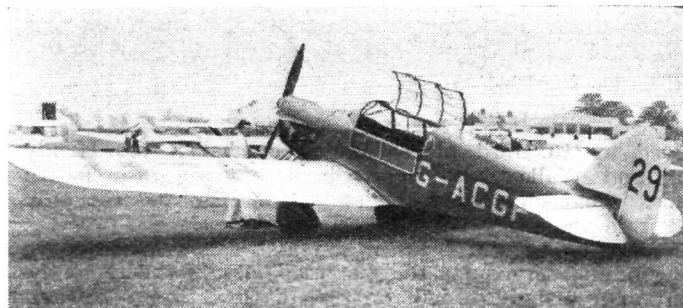
(FLIGHT Photos.)

Javelin), Flt. Lt. Armour, on another "Gull," entered by Prince George, and Mr. Percival, on a third "Gull." All got away on the drop of the flag except Mr. Percival, whose engine obstinately refused to start. The handle of the hand-turning gear was placed on the left side of the "Gulls" and had to be turned in an anti-clockwise direction. This proved awkward for a man standing on the ground, and as Mr. Reynolds held up first two fingers to indicate "two minutes to go," and then one finger, and finally the red flag, which he raised a few seconds before the actual start, there was a frenzy of cranking. Suddenly a tall gentleman in the crowd jumped on to the port wing, grasped the handle and cranked for dear life. This proved too much for the engine, and it started with a roar, the crank handle was whipped off and handed to Percival, and the machine was away, late by some seconds. Incidentally, it may be explained that the difference in the handicap allowances given the four "Gulls" seems to have been related mainly to the size of the wing-root fairings, Percival's being the largest, and extending aft along the fuselage a considerable distance.

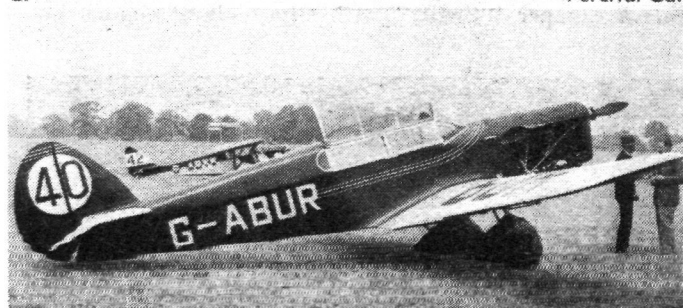
During the round Armour managed to overtake Borton and Lowdell, and came in first. Hope overtook Percival and Borton, but not Lowdell, who came in second, with Hope third and Borton fourth. This eliminated Percival and Stainforth. Percival, as we have said, was late in

starting, and this may have cost him a place in the heat. Stainforth's machine was not quite fast enough for him to overtake any of the other competitors, and he finished last, although by covering the circuit at an average of 160.46 m.p.h. he won the prize for the highest speed in Round I.

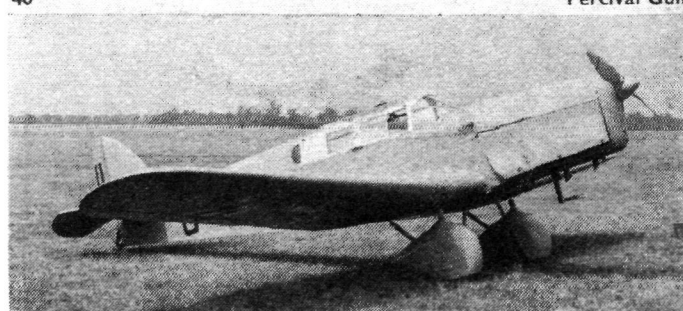
Hope had a narrow escape in this heat. He was going along merrily, the view from his machine actually not being nearly as bad as most people thought it was, when suddenly his engine spluttered. He was not flying very high at the time, and there was little time to ponder



29 Percival Gull



40 Percival Gull

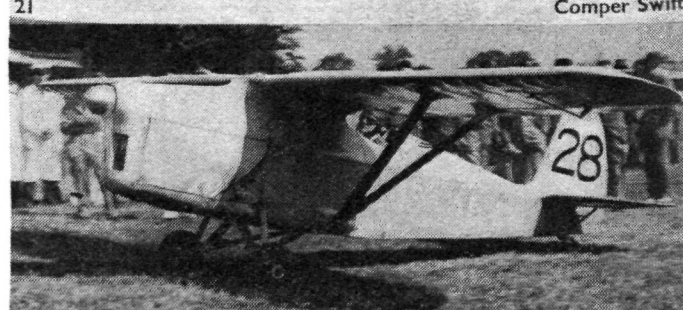


11 Percival Gull

27 See 28 Comper Swift

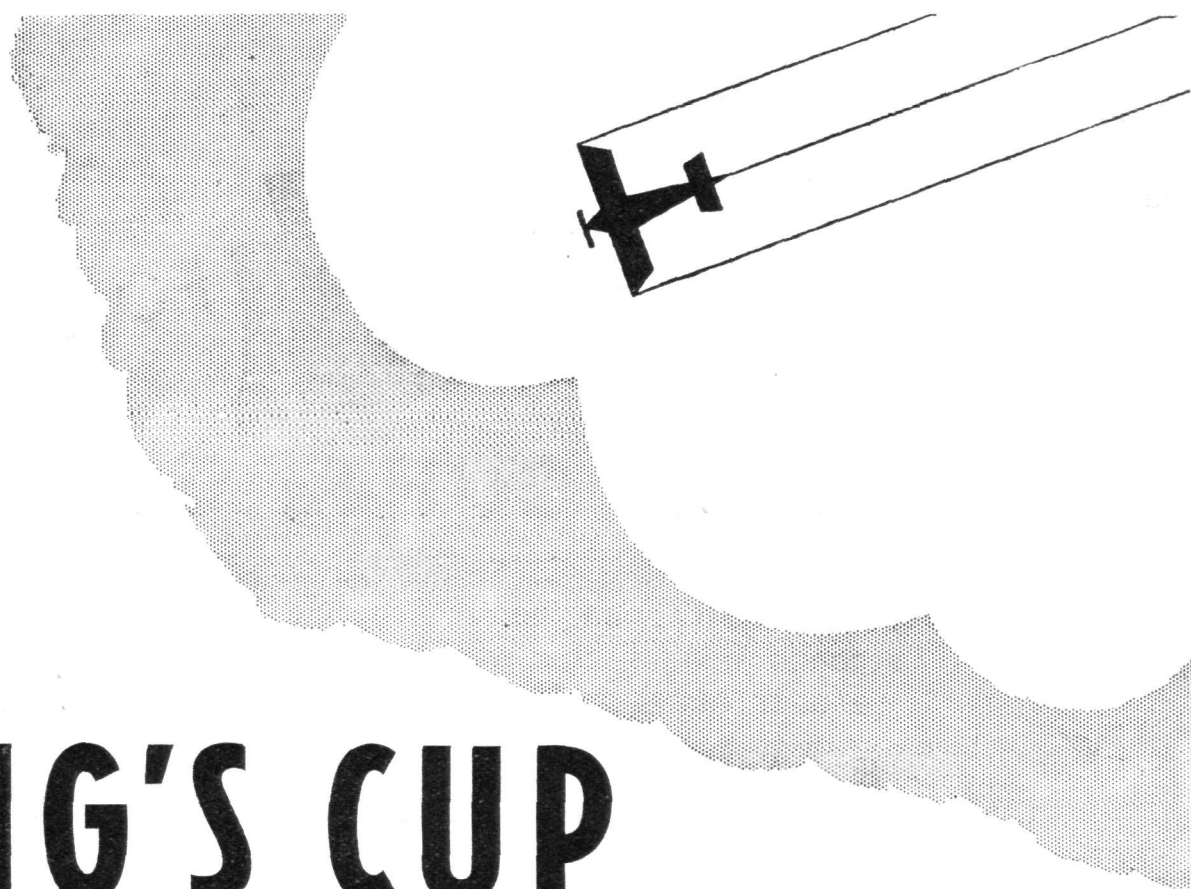


21 Comper Swift



28 Comper Swift

(FLIGHT Photos.)



KING'S CUP

AIR RACE

WON BY

Capt. G. de Havilland

Flying a

D. H. LEOPARD MOTH

(Gipsy Major Engine)

USING

The

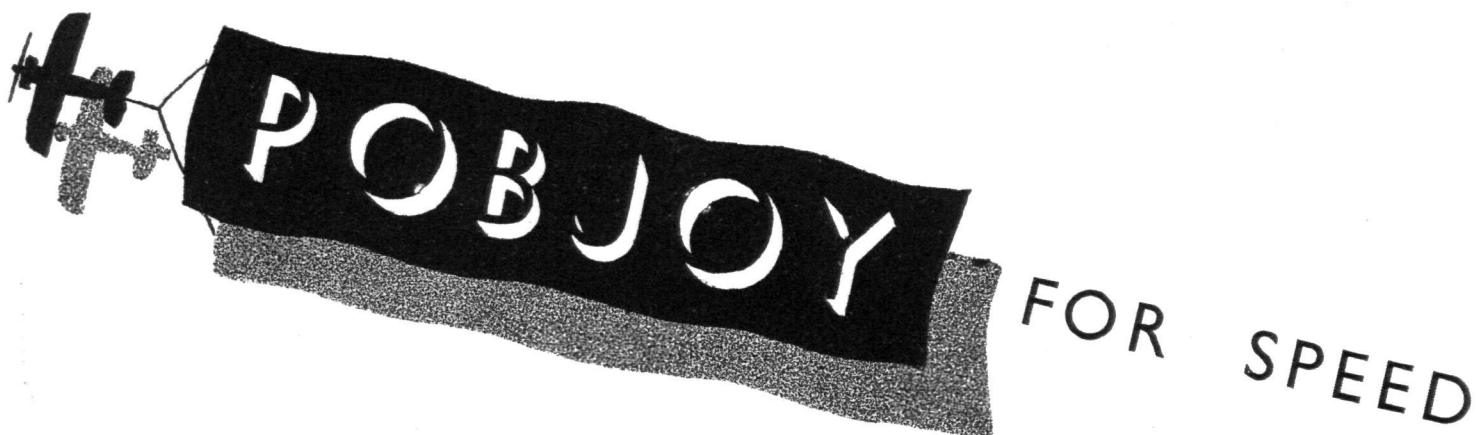
NEW

Mobiloil

REGD. TRADE MARK

VACUUM OIL COMPANY, LTD., LONDON, S.W.1

Save time by using the Air Mail.



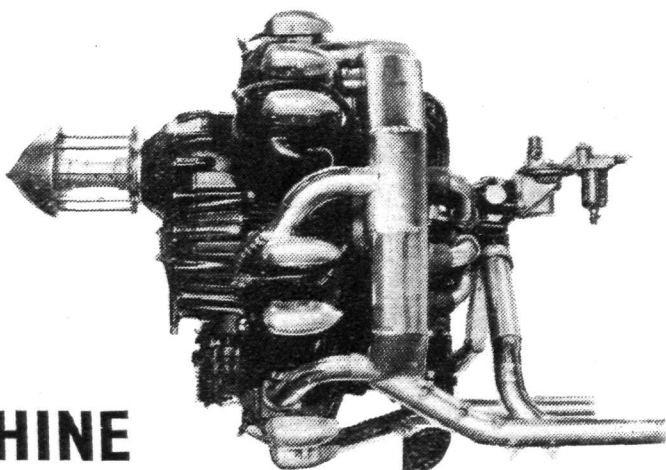
KING'S CUP RACE, 1933

FLIGHT-LIEUT. E. C. T. EDWARDS, piloting his Comper-Swift, with **POBJOY** engine, secured **SECOND PLACE**, only three seconds behind the winner, Captain De Havilland, to whom we offer our heartiest congratulations.

MR. A. HENSHAW, piloting his Comper - Swift with **POBJOY** engine **WON** the **SIDDELEY TROPHY**.

Also, in

- Heat 1, Mr. Bannister, Swift—**POBJOY** was **THIRD**.
- Heat 2, Mr. Edwards, Swift—**POBJOY** was **FIRST**.
- Heat 3, Mr. Henshaw, Swift—**POBJOY** was **SECOND**.
- Heat 7, Mr. Edwards, Swift—**POBJOY** was **FIRST**.
- Heat 7, Mr. Bannister, Swift—**POBJOY** was **THIRD**.
- Heat 8, Mr. Henshaw, Swift—**POBJOY** was **FIRST**.
- Heat 11, Mr. Edwards, Swift—**POBJOY** was **FIRST**.



FLY A POBJOY POWERED MACHINE

No **POBJOY** engine gave the slightest trouble throughout the day. All were flown continuously at full throttle and maximum revolutions. All were perfectly standard **POBJOY "R"** type engines. Mr. Edwards' engine is 18 months old, and Mr. Henshaw's one month old.

POBJOY AIRMOTORS LTD., HOOOTN, CHESHIRE, ENGLAND.



Kindly mention "Flight" when corresponding with advertisers,



STRAINING AT THE LEASH : The line-up for the first heat of the day, at 8 a.m. (FLIGHT Photo.)

what had happened. Fortunately, it suddenly occurred to Hope that the engine was giving up for lack of petrol, and he started pumping vigorously to replenish his gravity tank. The engine responded at once, and he began to climb once more, but only just in time, as he was not much more than 20 ft. up when the engine picked up again. His landing at Hatfield at the end of the round

ROUND II, 206.7 Miles

Racing No.	Pilot	Handicap Allowance	Finishing Time	Speed	Place
Heat No. 7	12 Strange ..	min. sec.	hr. min. sec.	m.p.h.	6
	33 Ayre ..	39 51	13 37 48	93.39	
	32 Westernra ..	37 50	13 14 26	115.45	2
	39 Bannister ..	30 26	13 19 02	118.55	5
	26 Edwards ..	28 44	13 16 50	123.14	3
Heat No. 8	42 Black..	28 44	13 14 04	126.62	1
	36 Stack ..	25 30	13 19 01	124.43	4
	6 Henshaw ..	28 44	13 32 03	121.53	6
	3 Irwin ..	25 30	13 29 48	128.43	1
	16 Runciman ..	25 30	13 30 44	127.20	3
Heat No. 9	1 Lady Bailey ..	25 07	13 30 50	127.57	4
	22 Broad ..	23 13	13 31 25	129.32	5
	2 Hattersley ..	22 28	13 30 29	132.63	2
	30 Styran ..	25 30	13 43 09	127.66	5
	24 Mrs. Butler ..	20 19	13 41 06	137.93	2
Heat No. 10	23 de Havilland ..	20 19	13 42 04	136.46	4
	5 Leech ..	19 58	13 40 55	138.75	1
	9 Bulman ..	19 37	13 41 57	137.70	3
	10 Lowdell ..	16 17	13 46 11	136.33	6
	29 Borton ..	06 33	13 54 08	152.58	3
Heat No. 11	17 Elsmie ..	06 18	13 54 01	153.27	2
	40 Armour ..	06 03	13 53 22	154.99	1
	27 Walker ..	04 34	Crashed		
	21 Hope ..	03 08	13 54 47	157.95*	5

* Fastest time in Round II.



THE COMFORTER : Capt. W. L. Hope derives comfort from an empty pipe when flying in the race. His "green-house" is shown in the open position. (FLIGHT Photo.)

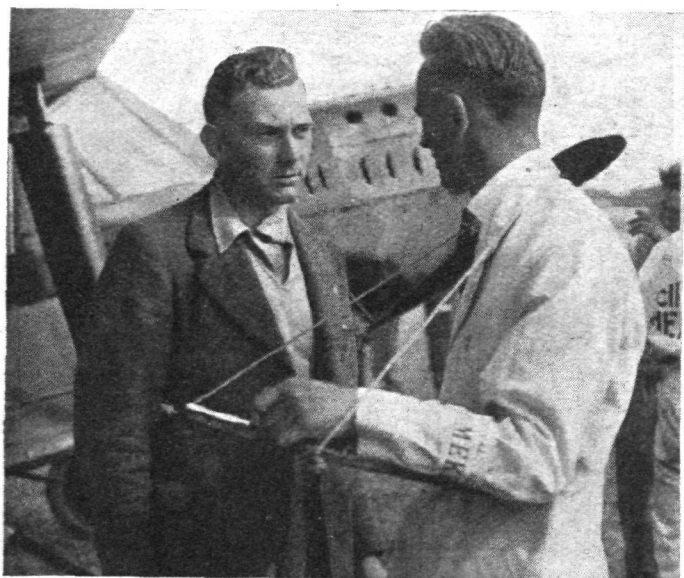
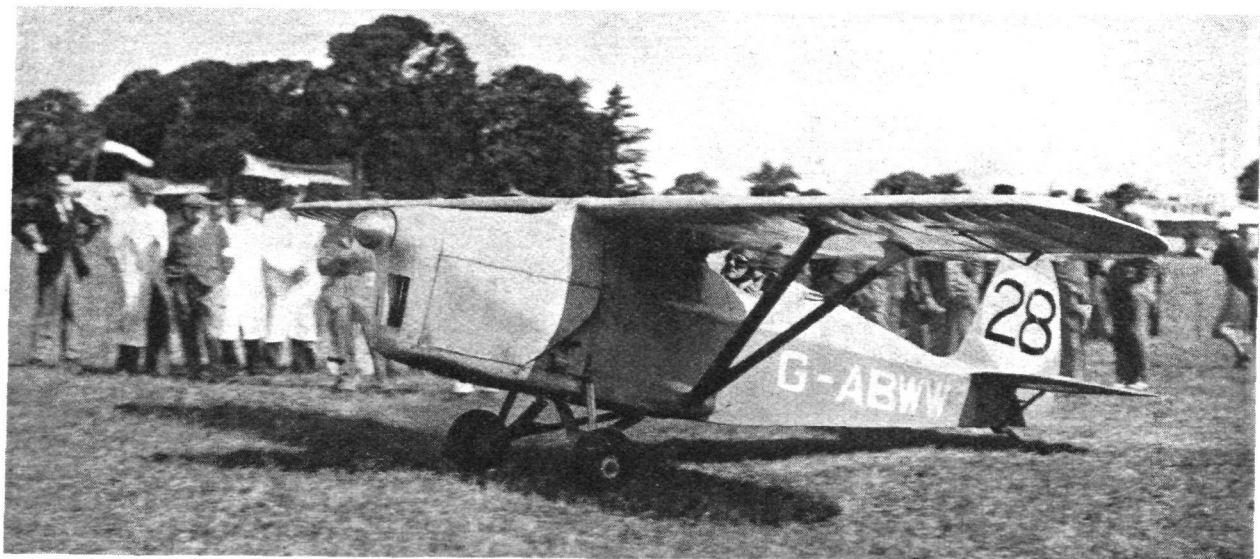
was superb, but a wag caused some excitement by yelling "Look, look!" When asked what was the matter, he replied: "Look at Hope, he has opened his conservatory and all the plants are blowing out."

Round II

The heats of Round I had been flown over the course Hatfield-Felixstowe-Bircham Newton-Hatfield. Those of



THE LIMIT MAN : Mr. T. C. Sanders getting away first in the King's Cup Race. His "Martlet" ("Genet") is a well-known sporting single seater. (FLIGHT Photo.)



A WORTHY LOSER : Capt. E. D. Ayre, who missed getting his three-year-old Desoutter ("Hermes II") into the final three by only 7 sec., is here seen talking to a time-keeper before starting on the final. (FLIGHT Photo.)

Round II were to be flown over another triangular circuit Hatfield-Cranwell-Desford (Leicester)-Hatfield. The competitors for Round II were divided into four heats, with six machines in each heat.

SCRATCH : Flt. Lt. G. H. Stainforth, who made the fastest time in the race with the Coupe Deutsch "Swift" ("Gipsy Major"), starting in Heat 6. (FLIGHT Photo.)

Heat 7.—In the first heat of Round II Col. Strange was limit man on the Spartan "Clipper" (Pobjoy), and Mr. Campbell Black was scratch on "Puss Moth" ABYW. The other four in this heat were: Capt. Ayre on the Desoutter, Westenra on "Puss Moth," Bannister on Comper "Swift" (Pobjoy) and Flt. Lt. Edwards on a similar machine.

Judging by his speed in Heat 1, Col. Strange had little

ROUND III, 194.7 MILES

	Racing No.	Pilot	Handicap Allowance	Finishing Time	Speed	Place
			min. sec.	hr. min. sec.	m.p.h.	
Heat No. 11	33	Ayre ..	35 39	15 55 39	116.06	2
	26	Edwards ..	27 05	15 55 17	127.37	1
	39	Bannister ..	27 05	15 58 04	123.62	7
	42	Black ..	24 02	15 59 27	125.84	8
	6	Henshaw ..	24 02	15 57 18	128.82	4
	3	Irwin ..	24 02	15 58 05	127.72	6
Heat No. 12	16	Runciman ..	23 40	15 57 59	128.37	5
	22	Broad ..	21 11	15 56 31	134.20	3
	24	Mrs. Butler ..	19 09	16 05 23	136.82	4
	30	Styran ..	19 09	16 04 07	138.88	2
	23	de Havilland ..	18 49	16 03 50	139.90	1
	5	Leech ..	18 30	16 05 05	138.36	3
Heat No. 13	10	Lowdell ..	18 35	16 10 33	137.46	8
	29	Borton ..	6 11	16 10 07	151.42	7
	17	Elsmie ..	5 57	16 10 02	152.04	6
	40	Armour ..	5 42	16 09 11	154.25*	5

* Fastest time in Round III.



THE FINAL : Our veteran timekeeper, Mr. George Reynolds (right), starting the first man. (FLIGHT Photo.)

K·L·G

P L U G S

were used by the winner of the

KING'S CUP

AIR RACE

for the twelfth consecutive year

- 1st** Capt. de Havilland flying a Gipsy Major
engined D. H. Leopard Moth.
- 2nd** Fit. Lt. E. C. T. Edwards flying a Pobjoy engined
Comper Swift.
- 3rd** Capt. A. J. Styran flying a Gipsy Major engined D. H.
Leopard Moth.

and every machine to finish was fitted with K·L·G's.

SIDDELEY TROPHY

Won by Mr. A. Henshaw flying a Pobjoy engined Comper
Swift, using K·L·G Plugs.

K·L·G SPARKING PLUGS, LIMITED LONDON, S.W.1

Save time by using the Air Mail.

LOW FRICTION - VERY LIGHT - ECONOMICAL - EASILY INSPECTED.

SIMMONDS-CORSEY

CONTROLS

are now fitted by twenty-three aircraft manufacturers in fifty different types of aeroplanes, including the De Havilland "Leopard" Moths that finished

1ST AND 3RD
IN THE KING'S CUP RACE

SIMMONDS AEROCESSORIES LTD., 55, TURNMILL ST., LONDON, E.C.1

PHONE CLERKENWELL: 7489



**THE
TWELFTH
KING'S CUP RACE**

THE BRITISH AVIATION INSURANCE COMPANY Ltd.

(with its predecessors) has effected insurance protection for the

Winner of every King's Cup Race

since the event was initiated in 1922.

Phone: MON. 0444 (5 lines).
 Grams: AVIACOY, LIME,
 LONDON.

Lloyds Building,
3/4, Lime Street,
London, E.C.3.

Kindly mention "Flight" when corresponding with advertisers.



THE HAWKER-WOLSELEY COMBINATION: The three Hawker "Tomtits" trying out their new Wolseley A.R.9 engines near Brooklands before the race. (FLIGHT Photo.)

chance, and as it turned out later, he finished last by a long way. His propeller was underpitched, and when he used full throttle the engine ran too fast. The power lost in this way was too great, and he had little hope of being placed, but he very sportingly carried on.

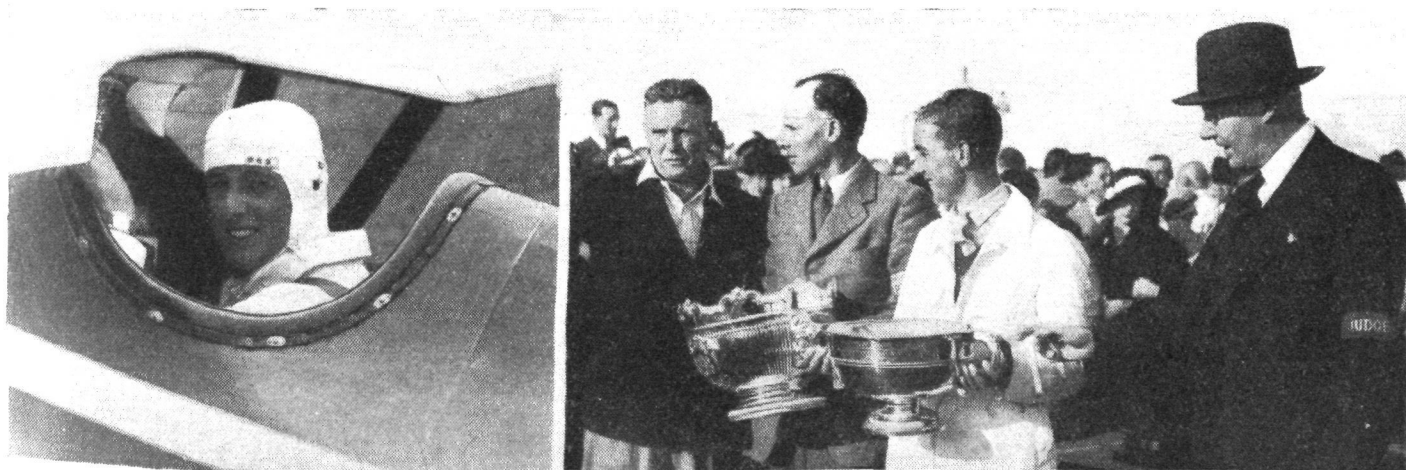
Edwards had supplied something of a surprise in Heat 2 by coming in well ahead, and when he arrived first again in Heat 7 it became obvious that here was a competitor who would be worth watching. He had overtaken Strange, Ayre, Westenra and Bannister during the circuit. Ayre started second in this heat and finished in the same position. Bannister overtook Westenra and finished third, with Campbell Black fourth, he having overtaken Westenra a short distance before crossing the finishing line. This heat eliminated Strange and Westenra.

Heat 8.—This heat included the following types, in order of starting: Comper "Swift" (Stack), Comper "Swift" (Henshaw), "Puss Moth" (Irwin), "Puss Moth" (Runciman), "Puss Moth" (Lady Bailey), and "Dragon" (Broad). Stack started as limit man in this heat, but his machine did not prove fast enough, and he finished last. The other *eliminée* was Lady Bailey. Irwin and Henshaw started together, but at the finish Broad

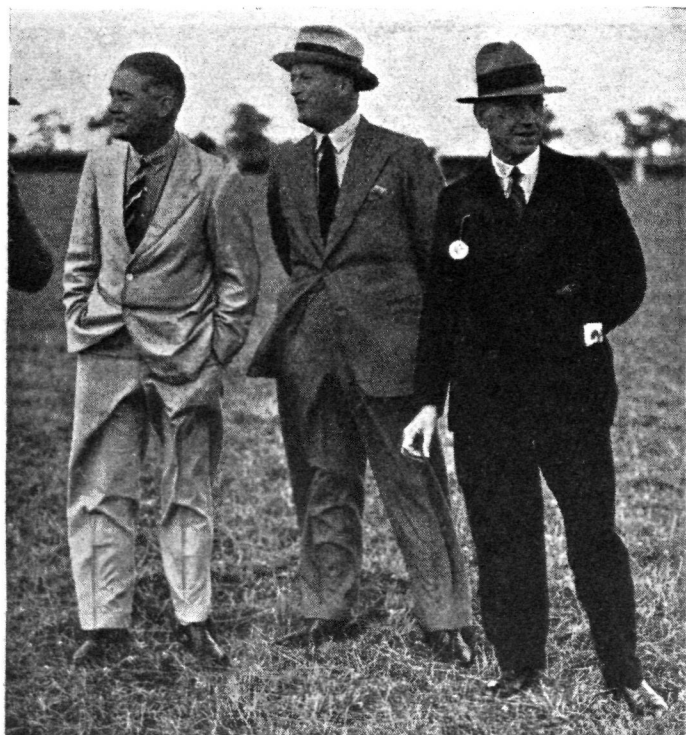
had pulled up to second place, with Henshaw first and Irwin third. Runciman secured fourth place. Broad, Irwin and Runciman finished very close together.

Heat 9.—The three "Leopard Moths" were matched in this heat, the other three competitors being Flt. Lt. Hattersley (limit) on "Puss Moth," F/O. Leech on Arrow "Active II," and Mr. Bulman on "Tomtit" (scratch). Hattersley and Bulman were the two to fall out in this heat. Mrs. Butler started level with Capt. Styran, and managed to steal a march on him by getting off very quickly and making a short turn, which brought her well ahead of Styran. Her flying was much admired for its smartness and precision. However, this did not avail her, as her machine was not quite as fast as Styran's, and at the finish de Havilland finished first, with Styran second, Leech third, and Mrs. Butler fourth. Thus all three "Leopard Moths" qualified for the semi-final.

Heat 10.—In the last heat of Round II three Percival "Gulls," piloted by Air Vice-Marshal Borton, F/O. Elsmie, and Flt. Lt. Armour, respectively, were matched against a "Tomtit," piloted by Mr. Lowdell, and two "Gipsy-Swifts," flown by Mr. Walker and Capt. Hope. Lowdell was limit man and Hope started scratch. It was



YOUTH AND EXPERIENCE: Mr. A. Henshaw (in white flying suit), though one of the youngest pilots in the race, flew his Comper "Swift" (Pobjoy) into seventh place, and also won the Siddeley Trophy as a representative of the Skegness and East Lincolnshire Aero Club. On the right he is here seen holding his Cup alongside Capt. G. de Havilland, the winner of the King's Cup, on whose right is Mr. A. J. Styran, who came in third. On the right of the picture is Lord Gorell (Chairman of the Royal Aero Club) who presented the Cups. (FLIGHT Photos.)



WOLSELEY SPONSORS: Left to right, Sir William Morris, Sqd. Ldr. G. H. Reid, Aeronautical Adviser to Sir William, and Mr. Cannell, Managing Director of Wolseley Motors. (FLIGHT Photo.)

a race for fast machines, and the result was awaited with great interest. Armour managed to overtake the three machines, which started ahead of him, and came in first. Elsmie just managed to beat Borton for second place, the two finishing very close together, with Borton in third



THE "TOMTIT" PILOTS: Left to right, P. E. G. Sayer, P. W. S. Bulman and G. E. Lowdell. (FLIGHT Photo.)

place. Lowdell just managed to scrape in as fourth, although Hope very nearly overtook him right on the finishing line. Walker failed to return, and after a time it was learned that he had crashed and "written off" his "Gipsy-Swift" completely, a few miles north of Northampton. Fortunately, Mr. Walker had had an almost miraculous escape, and was not seriously injured.

Round III

The course for the semi-final, or Round III, was: Hatfield-Bircham Newton-Wittering-Hatfield. It was flown in two heats, with eight machines in each heat.



THE TE-RACE: Despite the large number of visitors, the staff of the clubhouse at Hatfield proved themselves well able to deal with the demand for food and drink during the Race. (FLIGHT Photo.)



WINNER OF THE KING'S CUP AIR RACE, 1933

CAPT. GEOFFREY DE HAVILLAND
FLYING A D.H. LEOPARD MOTH

DOPED WITH "TITANINE"

SINCE THE INCEPTION OF THE KING'S CUP AIR RACE IN 1922
11 OUT OF 12 WINNING MACHINES HAVE BEEN DOPED WITH
"TITANINE"

CABLES:-
TETRAFREE
LONDON
CODES:-
ABC 5TH EDITION
& BENTLEYS

Manufacturers and Sole Proprietors

TITANINE-EMAILLITE LIMITED

166, PICCADILLY, LONDON, W.1

WORKS:-
HENDON...LONDON N.W.
NEW JERSEY...U.S.A.
MILAN...ITALY
BREMEN...GERMANY
HAGUE ... HOLLAND

Save time by using the Air Mail.

KING'S CUP

1933

Again!



Again!

MAGNETOS

were fitted to the Aeroplanes gaining

1st Place

D. H. Leopard Moth—
Gipsy Major Engine

2nd Place

Comper Swift—
Pobjoy Engine

3rd Place

D. H. Leopard Moth—
Gipsy Major Engine

SIDDELEY CHALLENGE TROPHY

Comper Swift—
Pobjoy Engine

**BTH—THE MAGNETO OF
UNFAILING RELIABILITY**

BTH **COVENTRY**

THE BRITISH THOMSON-HOUSTON COMPANY LIMITED, COVENTRY, ENGLAND

A1502 N.

Kindly mention "Flight" when corresponding with advertisers

Heat 11.—The competitors in this heat included three Pobjoy "Swifts" (Edwards, Bannister and Henshaw), three "Puss Moths" (Irwin, Campbell Black and Runciman), one Desoutter (Ayre) and one "Dragon" (Broad). The Desoutter was the first to start, and was followed by Edwards and Bannister, who started off together. Then came Black, Henshaw and Irwin, also together, with Runciman next and Broad at scratch.

FINAL ROUND. 205.6 MILES.

Racing No.	Pilot.	Handicap Allowance.	Finishing Time.	Speed.	Place.	Average Speed over whole Race.
		min. sec.	h. min. sec.	m.p.h.		m.p.h.
23	de Havilland	19 53	18 36 36	138.86	1	139.51*
26	Edwards	28 37	18 36 43	126.28	2	126.89
30	Styran	20 14	18 37 06	137.55	3	138.50
33	Ayre	37 39	18 37 13	115.06	4	115.89
5	Leech	19 32	18 38 09	137.01	5	137.65
24	Mrs. Butler	20 14	18 38 36	135.29	6	136.10
22	Broad	22 23	18 39 04	131.51	7	132.71
6	Henshaw	25 24	18 41 10	124.71	8	127.78

* Fastest over whole race.

This time Edwards had but two machines to beat, and this he did successfully, although Ayre on the Desoutter crossed the line but a very short distance behind him. Broad, who had started scratch, was flying a magnificent race, and pulled into third place, with Henshaw fourth. This heat disposed of Runciman, Irwin, Bannister and Campbell Black in the order mentioned.

Heat 12.—By the time the second heat in the semi-final was due to start excitement was beginning to grow. This heat would decide the second lot of four machines to go into the real race for the King's Cup, and it consisted entirely of fast machines, comprising the three "Leopard Moths" (Mrs. Butler, Styran and de Havilland), three "Gulls" (Borton, Elsmie and Armour), one Arrow "Active" (Leech) and one Hawker "Tomtit" (Lowdell).

FASTEST SPEED IN EACH ROUND.

Round No.	Heat No.	Distance.	Racing No.	Pilot.	Aircraft and Engine.	Speed
		miles.				m.p.h.
I	6	223.8	28	Stainforth	Comper "Swift" (Gipsy Major)	160.46
II	10	206.7	21	Hope	Comper "Swift" (Gipsy III)	157.95
III	12	194.7	40	Armour	"Gull" (Napier Javelin)	154.25
Final		205.6	23	de Havilland	"Leopard Moth" (Gipsy Major)	138.86

Once again Mrs. Butler and Capt. Styran started off together, and were followed in quick succession by de Havilland and Leech, and a little later by Lowdell, who was in turn followed, after a few minutes, by Borton, Elsmie and Armour, the latter starting at scratch. When the first machine hove in sight it was seen to be No. 23, the black "Leopard Moth" flown by Capt. de Havilland, who had overtaken Mrs. Butler and Capt. Styran. The latter came in second, and was followed by Leech and Mrs. Butler, very close together, the "Active" having overtaken the "Leopard Moth" but a short way from Hatfield. The result was that the three "Gulls" were out of the final, as was also the last Hawker "Tomtit."

The King's Cup Race

Regarding the 12 heats in Rounds I, II and III as eliminating trials, the real race for the King's Cup, the Siddeley Trophy and the prizes offered by Lord Wakefield, amounting to a total of £500, began when the eight surviving machines crossed the starting line for the final round, which consisted of two circuits of the course Hatfield-Henlow-Upper Heyford-Hatfield.

Capt. Ayre on the old Desoutter had managed to get into the final, and with flying colours at that, and started in the King's Cup Race as limit man. Next came Edwards on the Pobjoy "Swift," whose performance in the heats had also aroused admiration. He was followed by Henshaw on another Comper "Swift," after whom came Capt. Broad on the "Dragon" entered by Lord Wakefield. Broad's take-off in the final was one of the prettiest one

could hope to see. As usual, Mrs. Butler and Capt. Styran went off together in their customary fine style. Then followed at very short intervals Capt. de Havilland on the third "Leopard Moth" and Leech on the Arrow "Active" entered by Mr. C. G. Grey, Leech starting scratch.

People with slide rules, and people with mathematical minds and nimble pencils, had worked out that, barring accidents, Capt. de Havilland should be the winner, although both Edwards and Leech were thought to have chances, while Henshaw had been lapping at a speed which was certainly rather surprising for a Pobjoy "Swift."

The advantage of having the final in the form of two circuits of a short course, with a turning point at Hatfield, became obvious when the machines came within sight. Apart from Leech's "Active" and Broad's "Dragon," which are biplanes, all the machines were high-wing monoplanes, and it was a matter of great difficulty to decide, from the front view one obtained of the approaching machines, the identity of the competitors. This, of course, added to the excitement, and it was not until the machines began to round the turning point that one could be quite certain. Ayre on the Desoutter was found to have maintained his position in the lead, but the others were obviously closing in upon him, and it was a question whether in the last lap they would prove too fast for him. Edwards on the Pobjoy-engined "Swift" had started second, and rounded the aerodrome turning point in the same position, followed by Henshaw, who had started third. Then came a change. Instead of Broad's "Dragon," which should have been next, a monoplane was seen to be approaching, but was it Styran, Mrs. Butler or "D.H."? It looked dark, and de Havilland's "Leopard Moth" was painted a matt black. Yes, it was "D.H.," who had managed to overtake Mrs. Butler, Styran and Broad. He was followed by Broad and Styran, and later by Mrs. Butler, who came in neck and neck with Leech.

Ayre's lead over Edwards when they rounded the Hatfield turning point was roughly four minutes, and a couple of minutes separated Edwards from Henshaw and Henshaw from de Havilland. The slide rule experts predicted a very close finish, and seemed to favour de Havilland if his engine could stand the pace. It did! And "D.H." crossed the finishing line as winner, amid tremendous applause. He was followed seven seconds later by Edwards on the Comper "Swift" (Pobjoy), who had flown a magnificent race and thoroughly deserved his success. Capt. Styran came in as third, some twenty-five seconds behind Edwards, adding third place for a "Leopard Moth" to the first place secured by Capt. de Havilland. Only seven seconds behind Styran came Ayre on the Desoutter, whose performance during the day had caused the greatest admiration. Leech was next on the Arrow "Active," and then came Mrs. Butler on the third "Leopard Moth." Henshaw on the Comper "Swift" (Pobjoy) was seventh to cross the line, being followed by Broad on the "Dragon" ("Gipsy Majors"), but "zoomed" as he approached the line, thereby crossing it at too great height. He had to make a turn and re-cross the line, which brought him behind Broad, as last man.

By finishing first Capt. Geoffrey de Havilland won the King's Cup and Lord Wakefield's first prize of £250. Flt. Lt. E. C. T. Edwards received Lord Wakefield's second prize of £100. Capt. A. J. Styran, who finished third, received Lord Wakefield's third prize of £50, and Mr. Henshaw was winner of the Siddeley Trophy, presented by Sir John D. Siddeley, as the only "surviving" representative of a Light Aeroplane Club (Skegness and East Lincs. Aero Club).

In addition to these prizes, the following each won a prize of £25 for the fastest time in each of the four rounds: Flt. Lt. G. Stainforth, Comper "Swift" ("Gipsy Major") (160.46 m.p.h. in Heat 6); Capt. W. L. Hope, Comper "Swift" ("Gipsy III") (157.95 m.p.h. in Heat 10); Flt. Lt. J. G. D. Armour, Percival "Gull" (Napier "Javelin") (154.25 m.p.h. in Heat 12); and Capt. Geoffrey de Havilland, "Leopard Moth" ("Gipsy Major") (138.86 m.p.h. in final). Lord Gorell, chairman of the Royal Aero Club of Great Britain, presented the prizes.

Some Comments

Having told in brief the history of the 1933 King's Cup Race as it was seen at the de Havilland aerodrome at Hatfield, it may be of assistance to give, for the benefit of future King's Cup Races, some impressions incidental to the race.

The organisation was, on the whole, admirable. The

manner in which the competing machines were parked for inspection on the day before the race was excellent. The aircraft were arranged in orderly rows, and in numerical order, so that by walking up one row, down the next, and so forth, the task of examining the machines was made as easy as possible.

On the day of the race also the organisation was, in the main, good. The marshalling of the machines on to the starting line was carried out without a hitch, and the very greatest credit is due to the various officials who had volunteered their services. They did remarkably well, and the size and shape of Hatfield aerodrome permitted of proper arrangements being made.

On the whole, the scheme of running the race in heats, which originated, we believe, with Maj. Mayo, can be counted a success. As it happened, its failure to be a complete success was not inherent in the system but was due to certain shortcomings on the part of what one may term the Intelligence Service. Mr. Alan Goodfellow was good on the loud speakers. Every word was distinct, and, in the main, the information he gave was of the right sort. But he did not give enough of it. We do not say this was his fault. He most likely was not supplied with the necessary material. For example, it was an excellent idea to announce the comparative speeds of certain competitors in the different rounds, but the manner in which one competitor was overtaking another was not brought out. The score-boards were all but useless. They were much too small for one thing, and they merely gave the starters and finishers in the various heats. This was not enough. Speeds ought to have been added, and, probably, finishing times to show the closeness or otherwise of the different finishes. Broadcasting is an adjunct to, but not a substitute for, the score-boards. Very often, just as Mr. Goodfellow was announcing the speed of a competitor, the announcement would be drowned by an excited female in the enclosure shrieking her joy at the "accidental" meeting with somebody whom she had been manoeuvring to meet all day, or by the raucous cries of newsvendors, or by the odds announced by the "bookies." When that happened, one was obliged to fall back upon the score-boards, and they hardly ever gave the information one wanted. Next time there must be better score-boards. The loud-speaker installation must also be improved. The speakers that were installed were good, but their number was insufficient. One, at least, ought to have been placed where it could be heard from the terrace of the clubhouse. And one certainly ought to have been placed somewhere behind the starting line. Many of the competitors had no opportunity to get into the enclosures, and as the nearest loud speaker could not be heard from the starting line, they knew less of the progress of the race than anyone!

In the actual race there was little to find fault with, but what appeared to be something of an injustice was noticed in the case of the starts of machines Nos. 3 and 6, the "Puss Moth" flown by Irwin and the "Pobjoy-Swift" flown by Henshaw. These two machines had the same handicap allowances, and started off together in Heats 3, 8 and 11. In each case Irwin was given the inside of the turn. We do not doubt for one moment that this was pure coincidence, but it imposed a slightly unfair handicap on Henshaw.

With the wind direction where it was on July 8, it was somewhat unfortunate that competitors who had finished had to land across the path of the machines which were approaching the finishing line. As, however, the landing machines were by then very low, there was never any real danger, the machines nearing the finishing line flying well above those in the act of landing. It is, however, better to arrange for this crossing not to be necessary.

As to the finishing line itself, this should *always* be so placed as to be at right angles to the enclosures, so that in crossing the line competitors fly parallel with the enclosures. In that way the spectators can not only identify the machines, but can also see who is leading. When a machine is approaching the enclosure this is almost impossible. The system of placing the racing number on the rudder has long been in use, and it is difficult to think of a really good substitute, but it does very frequently happen that the machine banks away from the spectators, just as one wants to read the number, and then the tail-plane cuts off the view of the number on the rudder. One is then compelled to make the identification by means of the letters under the wing. This is not always easy, and anyway, by the time one has read them and

found them in the programme, the next machine or two has probably passed over, and one loses track of the order of finishing.

The only really exciting circuit in the 1933 King's Cup Race was the final, which was a short one and had to be flown twice. The fact that competitors have to round a turning point on the aerodrome and then go off again on the second lap adds greatly to the interest, and makes the race very much more "intimate" than it can possibly be when machines go straight out, disappear for a couple of hours, and then come back from a slightly different direction. But the placing of the turning point is important. At Hatfield the turning point was in quite a good place from the spectators' point of view, but it was invisible from the enclosures. The result was that one had no means of knowing just when a machine would begin its turn. The turning point should be made visible to spectators no less than to competitors, either by means of a pylon or by a balloon.

We feel very strongly that some slight modification in the planning of the courses might result in a vast improvement from the interest point of view. "Star"-shaped courses, with an intermediate turning on the aerodrome, so that on the second lap the machines do not go off in the same direction as they did on the first, would, we think, add interest. Should there be any fear of machines from two heats getting "mixed up," it should be possible, at least on an aerodrome as large as Hatfield, to arrange two different turning points on the aerodrome, the courses being so arranged that the machines turned away from each other, one set doing left-hand and the other right-hand turns.

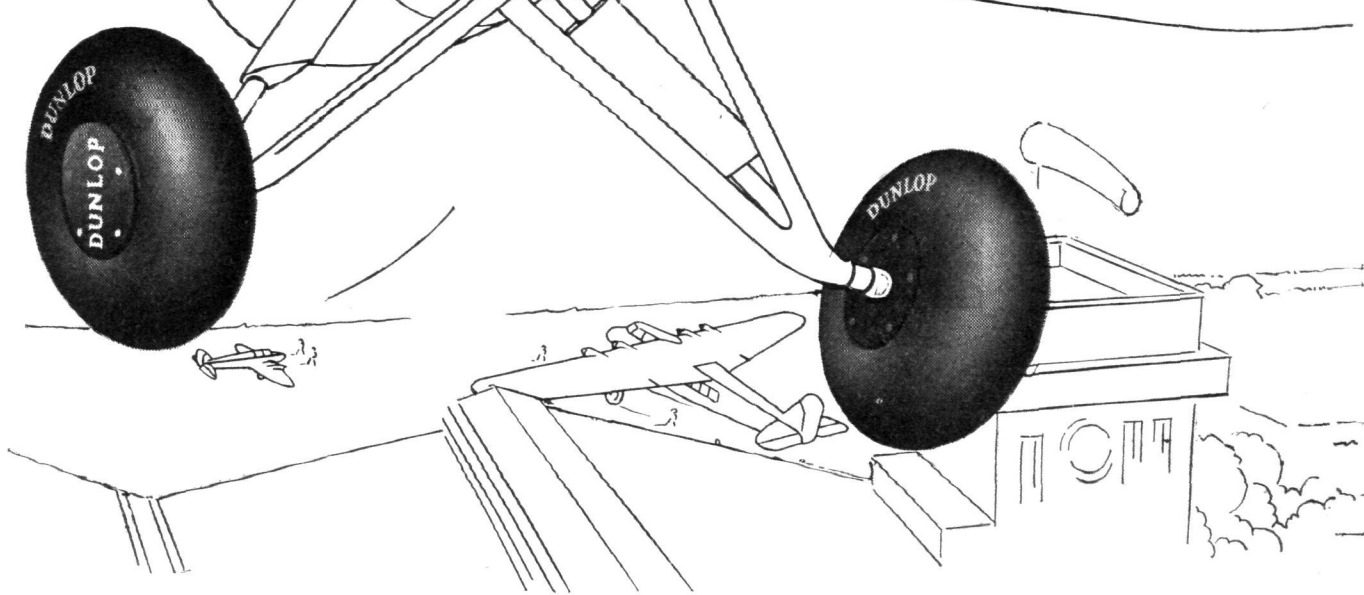
When thinking about a race of this nature one is rather apt to consider only the aircraft, its engine and perhaps engine accessories, but a moment's thought will show that there are many other very vital parts of equipment and similar necessities which are none the less important in this business of winning races. For example, the engines will not work unless the sparking plugs stand up to their work. For these the winner relied upon K.L.G., as did the second, third, winner of the Siddeley Trophy, and all the other finishers. A compass is most important where the slightest deviation from the course means a loss of many miles per hour and consequently places in the race; Capt. de Havilland knows this only too well and therefore used a "Husun." His other dashboard instruments were perhaps no less important to him, so he relied on Smith's. The material with which the wings and covered surfaces are doped must be of a kind which will stand up to the hard work involved, and since the King's Cup Race first started in 1922, 11 out of the 12 winners have all used Titanine, so it was natural that the winner this year should do likewise. The fuel consumed by the engine must be above reproach, and Capt. de Havilland was certainly served well by Shell in this year's race. For lubricating his engine a thoroughly reliable oil was vital, the new Mobiloil stood him in good stead for this purpose. With so many heats the necessity of ensuring that no trouble was experienced on landing made people look carefully to their landing wheels, brakes and tyres. Dunlop's saved the winner and the third any trouble on this score. A Turn Indicator is often the means of getting a competitor out of dirty weather safely and of keeping him straight on a northerly course; we found a Reid & Sigrist Turn Indicator in the winner's cockpit. Fairey metal airscrews are one of the most ordinary insurances against airscrew trouble and are used in increasing numbers in racing aircraft; out of the 35 machines which started this year 24 used them, including the winner. A magneto may be out of date as regards motor-car practice, but it is certainly not so for aircraft engines. Nowadays trouble from this source seldom occurs, and the winner, the second, the third and the winner of the Siddeley Trophy all had perfect service from their B.T.H. magnetos.

A good finish to the aircraft must be obtained if skin friction is to be reduced to a minimum. In this connection we were particularly impressed with that obtained with Cellon on the "Gull" entered by Sir Philip Sassoon and also on the "Swifts" flown by Flt. Lt. Stainforth, and that which Mr. Henshaw flew to win the Siddeley Trophy. Stainforth's "Swift" was the fastest machine in the race. Mr. Henshaw, though a newcomer to racing in the air, made certain that his Pobjoy engine should give him no trouble by using National Benzole Mixture for his fuel and Wakefield's Castrol for the lubrication.

Improve Performance by fitting

DUNLOP

AEROPLANE TYRES, WHEELS & BRAKES



DUNLOP RUBBER COMPANY LIMITED, FORT DUNLOP, BIRMINGHAM.
Branches throughout the World.

THE 830 MI

KING'S

WO

CAPTAIN GEOFFREY

STAN

LEOPARD

STAN

GIPSY

AT AN AVERAGE SP

Full particulars of the Leopard Moth and of the Gipsy Major engine may be obtained from THE DE HAVILLAND AIRCRAFT COMPANY LIMITED, STAG LANE, EDGWARE, MIDDLESEX, ENGLAND. Associated Companies in Canada, Australia, South Africa and India. Licensees, Selling and Service Agents throughout the World.

Kindly mention "Flight" when corresponding with advertisers.

JULY 13, 1933

ADVERTISEMENTS

FLIGHT

AIR RACE

CUP

BY

E HAVILLAND, O.B.E., A.F.C.

ARD

MOTH★

ARD

MAJOR

ED OF 139.51 M.P.H.



The other two Leopard Moths entered (both **standard** machines with **standard** engines) finished **3rd** and **6th**.

Save time by using the Air Mail

MEDIUM - PRESSURE TYRES FOR LUXURIOUS LANDING ...

*Feather-light landing—
Concussion-proof
Construction*

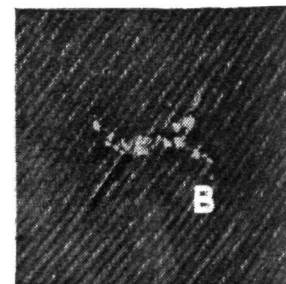
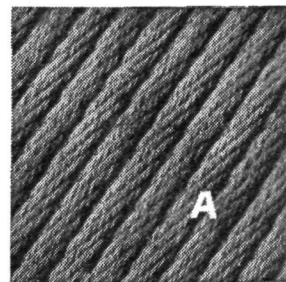


PALMER FOR SAFETY

Taxi in comfort, land without jolts on Palmer "Medium-Pressures."

The unique Palmer construction of two layers of tough cord makes a stronger, lighter, more flexible tyre.

Contrast the illustrations. (B) shows the actual fracture caused to the inner ply of an ordinary tyre by stone-bruising. Result — concussion burst. A Palmer Cord Tyre (A) came through the same test undamaged.



PALMER AIRCRAFT LANDING WHEELS, TYRES & BRAKES
TO SUIT ALL TYPES OF AIRCRAFT.

THE PALMER TYRE LTD., ALDWYCH HOUSE, LONDON, W.C.2.

Telephone: Holborn 8461.
Telegrams:
Palmertyr, Estrand, London.

Kindly mention "Flight" when corresponding with advertisers.

The Technical Aspect

From a technical point of view, this year's King's Cup Race was a triumph for British light aero engines. Out of the 35 starters but two were put out of the race by engine trouble. Of these the one at least was a very minor trouble in that it was merely a tappet rod jumping out. This was in the "Cirrus III" of the Miles "Hawk," flown by Wing Commander Probyn, and may conceivably have been caused by running the engine at high speed, which may have caused valve bounce. We do not say this is what happened, but it is a likely explanation, and in no way detracts from the normal reliability of the "Cirrus III."

The retirement of Mr. Lipton, who was flying the "Gipsy Moth" flown by Hope last year, fitted with a "Gipsy III" instead of the "Gipsy Major," was due to the propeller breaking, an accident which is not, strictly speaking, to be classed as an engine failure. The only other retirement, that of Mr. Walker, who crashed on landing, was not due to engine failure, but to the pilot forgetting to pump petrol into his service tank from the main petrol tank.

Altogether, therefore, British engine manufacturers may be very proud of their products. The three "Gipsy Majors" in the "Leopard Moths" and the two in Broad's "Dragon," stood up to the complete course of more than 830 miles at full throttle. The "Gipsy III" in Leech's Arrow "Active" also went through the full distance without any trouble. All the other "Gipsy Majors" and "Gipsy III's" stood up to their work for longer or shorter periods, according to the heats in which they were "eliminated."

For the "Pobjoy" engines the day was a distinct success. This engine was not in the winning machine, it is true, but a "Pobjoy R" finished second in Edwards' "Swift," and another "Pobjoy" completed the full course in Henshaw's "Swift." In this connection it is

interesting to place on record the fact that the engine in Edwards' machine was by no means a new one, having been built in November, 1931. The "Pobjoy" engine in Bannister's "Swift," which got as far as Heat 11, Round III, was actually the original type-test engine, which has been flying pretty regularly ever since. Not a single "Pobjoy" engine broke down, although all of them were being hard pressed.

The four Napier "Javelin" engines had hard luck in that the Percival "Gulls" in which they were fitted were eliminated during the heats, not certainly because of any mechanical defect in the engines themselves, but because the machines were too slow for their rivals, and did not come up to the 163 m.p.h. advertised in the programme.

A similar fate befell the three Wolseley A.R.9 engines, only one of which got as far as the semi-final. Again it was a question of aircraft speeds and not of engine reliability. In point of fact, the three Wolseley's sounded as if they would have enjoyed going the whole course.

Of the various "Hermes" engines in the race none caused any retirement due to mechanical trouble, and the outstanding example of reliability was provided by the "Hermes II" in Capt. Ayre's Desoutter, which went through the whole course without a splutter. This machine has done 1,000 hours' flying, and the engine has seen real hard service. The fact that it got through the whole race speaks well for the engine overhaul shops of National Flying Services, Ltd., which are in the charge of Capt. Ayre himself.

Aluminium alloys play a very important part in the modern aero engine, and the fact that the King's Cup engines stood up so well to the hammering they received is an eloquent testimony to the quality of the aluminium alloys of High Duty Alloys, Ltd., of Slough, who has supplied a great deal of material for the various engines.

The three de Havilland "Leopard Moths" and the "Dragon" were all fitted with the Simmonds-Corsey control, as was also the Monospar ST.6 flown by Schofield.

Airism's from the Four Winds

Mr. Mattern Found

News from New York states that Mr. Mattern has been found at Anadyr, Chukotski, in North Eastern Siberia. Mr. Mattern left Khabarovsk, Siberia, for Nome, Alaska, on June 14, since when nothing had been heard of him. On July 7 two messages were received, one in New York, the other in Moscow, stating that he was safe and well. It is not known why he landed at Chukotski, but during the period that he was missing many machines were searching for him.

Another Australia-England Flight

ANOTHER attempt on the Australia to England record is being made by Mr. J. Woods, a pilot of West Australia Airways. Flying a "Gipsy Moth" named the *Spirit of Western Australia* he left Broome, Western Australia, just after midnight, on Friday, July 7. He arrived at Batavia in the evening of the same day, and proceeded to Alor Star, Malaya, the same day. After an hour's rest he carried on to Victoria Point, Burma. Leaving Victoria Point on Sunday, July 9, he started off for Rangoon, but was compelled to turn back by rain.

Mr. Ulm's Progress

MR. C. T. ULM, who left Sydney on June 24 in an attempt to establish a new Australia to England record (whose progress was reported in FLIGHT for July 6), arrived at Aleppo from Basrah on Tuesday, July 4. He took off again later and arrived in Rome on Wednesday evening, July 5. On Thursday, July 6, he continued his flight to England, but was forced down by engine trouble near Lyons. Eventually on the evening of Monday, July 10, he arrived at Heston. Mr. Ulm, with Mr. G. L. Allen and Mr. P. G. Taylor, left Australia at midnight on Friday, June 23, and they next propose to fly on to New York.

The Italian Formation Flight

As reported in our last issue, the 24 Savoia-Marchetti flying boats, under the command of Gen. Balbo, were unable, owing to unfavourable weather conditions, to leave

Londonderry for Iceland on July 3. It was not until July 5 that a sudden start was made shortly after noon, Gen. Balbo having decided to take off after a consultation with the weather experts. The 24 machines, led by Gen. Balbo, took off one by one at 12.40 p.m., and at 4.59 p.m. Gen. Balbo's machine alighted at Reykjavik, followed at intervals by the remaining 23—the last alighting at 5.28 p.m. The journey was uneventful except that they passed through thick fog at about 3 p.m. The next stage was to Labrador, a distance of about 1,500 miles, but bad weather again held up the "Armada"—and at the time of writing they were still waiting for favourable weather conditions.

Col. Lindbergh's Survey Flight

COL. AND MRS. LINDBERGH, who (as was reported in FLIGHT for June 29) are making a survey flight for Pan-American Airways, left New York on July 9 to fly by easy stages to Greenland. Owing to fog they were forced to land near Rockland, Maine, on their way to Halifax, Nova Scotia.

The Death of Georges Guynemer

THE identity card of Capt. Georges Guynemer, the French pilot who brought down 53 German aeroplanes, has just been sent by Dr. Knauss, of the Deutsche Luft-hansa, to the Farman Aviation Co. Dr. Knauss states that he obtained it by chance from a German war pilot, and he also says that Guynemer (who was lost on September 11, 1917) was brought down to the north of Ypres behind the German lines. The area was evacuated owing to the heavy British bombardment, but was afterwards re-occupied by the Germans, and then Guynemer's identity card was picked up. At the time King Alfonso made special inquiries about Guynemer's death, but could obtain no precise information.

Prince, Aviator, Ambassador

THERE are few who realise to the full the amount of work through which the Prince of Wales has to get. There are fewer still who give just appreciation to the wonderful

memory, the tact, the sympathy to every just cause, which has made the Prince so popular wherever he goes. The Prince of Wales has graciously consented to allow a film to be made of his life, which has been put into the capable hands of the Gaumont British Co. If there is any feelings of justice in the minds of those who belittle the Prince they should see this film without delay, and incapable, indeed, of all logical reason, will be their minds if they come away unconvinced of their error. The film is one which no one should miss. Apart from the personal pride and interest which all decent Englishmen should take in the welfare of their Prince, there is much to be learnt from this film about various parts of the Empire. As an introduction there is shown portraits of the Prince at various early ages, the first being when but a few days old, taken in company with his father, his grandfather and his great-grandmother. The first actual moving picture is of his investiture as Prince of Wales, and a slight nervousness, not without a certain charm, is noticeable even at that early age. A few feet of the film is devoted to the war. The Prince held a commission in the Coldstream Guards, and is shown escorting his Royal father round the battlefield—a little air of an "old timer," for the Prince had by then been in France for over a year, being very noticeable. The interest His Royal Highness takes in aviation is shown by some very good shots of him with the various machines he has owned from time to time. The most interesting part of the film is that which is devoted to his tour of the world. Here are shown some really excellent pictures of native life in various countries, and many views of exquisitely beautiful scenery. There is one delightful picture of the heir to the British throne calmly filming elephants, one of which cannot be much more than 100 yds. distant.

That his world tour was not all easy and pleasant the film clearly shows; after all, there is not much pleasure in so tiring your right hand by shaking hands with people that resort had to be made to using the left hand, and still he had a smile for all and a pleasant word for many. At the conclusion of the film His Royal Highness makes an eloquent plea for help in improving the conditions of the unemployed by useful social work amongst them, to which object a percentage of the takings of this film will be devoted. "Ich Dien," "I Serve" is the motto of our Prince of Wales. No man could be more worthy of it, for few men have rendered such dutiful service to their Country and Empire.

Aerial Samaritans

SWEDEN'S aerial ambulance, which was started in 1923 by the Swedish Red Cross on the initiative of its President, Prince Carl, a younger brother of King Gustav, is this year celebrating its tenth anniversary. It has rendered great services to inhabitants of remote and isolated districts in North Sweden. The pilots have had many hardships to overcome, often flying through snowstorms, darkness and fog, at times even being compelled to fly along a railway track owing to bad visibility. The machine used being a seaplane, the pilot was always compelled to find a lake or a river on which to land. Many stories are



JIM JUMPS T'OWT : J. Mollison had to start up the "Gipsy Major" engines of his *Seafarer* in a hurry when the tide rose at Pendine Sands last week. Here he is!

told about the various difficulties overcome by pilots. On one occasion a pilot had to fly his machine and at the same time hold down his woman passenger, who was delirious with fever and endeavouring to throw herself out of the machine. On another occasion the plane went out to fetch a sick Lap woman. Her companions were so alarmed by the noise of the machine that they fled off into the wood, taking the woman with them, and it was some time before the pilot could find them, quell their anxiety and persuade them to let the woman go. The location of the sick person's habitation is marked by fires or by large white sheets spread out on the ground.

A Police Plane

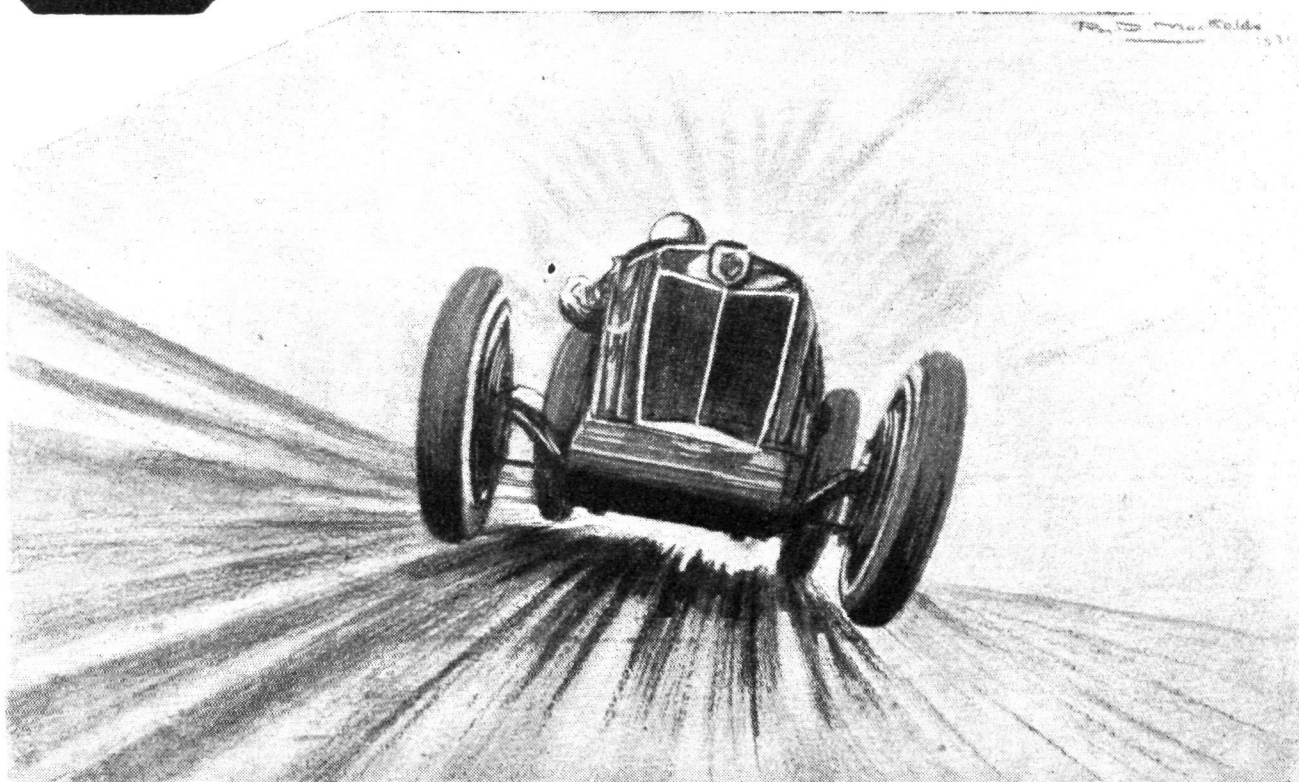
THE CHIEF CONSTABLE OF LEICESTERSHIRE, Capt. Lynch-Blosse, owns an aeroplane, and desires to use it for official purposes. The County Council have decided to seek a Home Office grant towards the expense of carrying out certain experiments in the detection of crime with this machine.



A NATIONAL AIR RACE WINNER : Col. Roscoe Turner and his "Wasp"-powered Wedell-Williams on which he won the Bendix race from New York to Los Angeles in 11 hr. 40 min.



Wins Six out of Seven Events at Ballybannon Hill Climb (Northern Ireland, June 10, 1933)



By courtesy of "Motor Sport."

A Standard Supercharged J3 M.G. Midget won five events and made fastest time of the day.

SIX
FIRSTS

860 c.c. Class	J. S. C. Cupples...	M. G. Midget...	51 m.p.h.
1,100 c.c. Class	Victor Ferguson ...	J3 M. G. Midget...	62.11 m.p.h.
1,500 c.c. Class	Victor Ferguson ...	J3 M. G. Midget...	59.08 m.p.h.
2,000 c.c. Class	Victor Ferguson ...	J3 M. G. Midget...	64.08 m.p.h.
Unlimited Sports,	Victor Ferguson ...	J3 M. G. Midget...	62.88 m.p.h.
Unlimited Racing,	Victor Ferguson ...	J3 M. G. Midget...	62.88 m.p.h.

ONE
SECOND

860 c.c. Class ... H. M'Gladdery ... M. G. Midget

TWO
THIRDS

860 c.c. Class ... M. H. Fleming, Jr. ... M. G. Midget
Handicap Class... G. F. Annesley ... M. G. Magna

(Subject to official confirmation.)

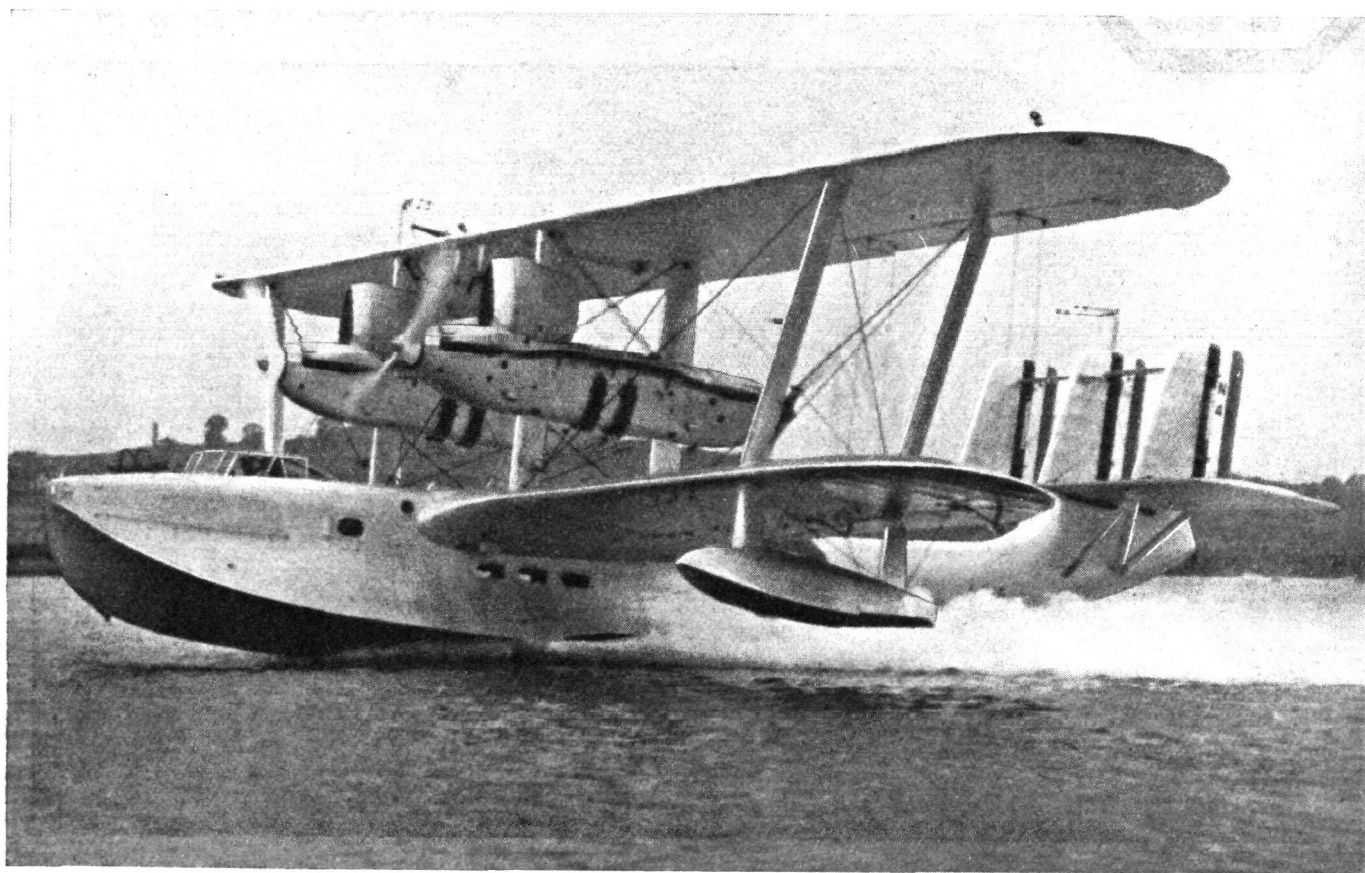
Issued by the Publicity Department of the M.G. Car Company, Limited, Abingdon-on-Thames, Berkshire.

Export Department: Stratton House, 80, Piccadilly, London, W.1.

Save time by using the Air Mail.

THE SHORT SINGAPORE

4 ROLLS-ROYCE "KESTREL" ENGINES.



As supplied to and under construction
for
The Royal Air Force.

Designed and constructed by

SHORT BROS. (Rochester & Bedford) LTD. ROCHESTER

Telephone : Chatham 2261.

Telegrams : "Seaplanes," Rochester

Telephone :
WHITEHALL 8378.

LONDON OFFICE :
WHITEHALL HOUSE,
41, WHITEHALL, S.W.1

Telegrams :
"TESTED," LONDON

Kindly mention "Flight" when corresponding with advertisers,

Air Transport

THE ACCIDENT TO THE "CITY OF LIVERPOOL"

THE report of the technical inquiry made by the Belgian authorities into this accident has been received by the Air Ministry, and a further supplementary report by the Inspector of Accidents of the British Air Ministry has now been completed and rendered to the Secretary of State for Air. The substance of the conclusions reached in both reports is now published for information.

The aircraft *City of Liverpool* ("Argosy"), owned by Imperial Airways, Ltd., left Brussels shortly after midday on Tuesday, March 28, 1933, on the second stage of a journey from Cologne to London. Fifty minutes after the start it caught fire in the air and crashed on plough-land in the neighbourhood of Dixmude. There were no survivors.

The finding of the Belgian inquiry is to the effect that the fire broke out in the central portion of the aeroplane, between the forward luggage hold and the after luggage hold; that the theory that the fire originated from the engines is practically untenable; and that while possible causes could be suggested, these are speculations only, and the evidence does not admit of any definite cause being ascribed.

The finding of the Inspector of Accidents of the British Air Ministry is to the effect that on the evidence available it is not possible to reach any conclusion as to the actual origin and cause of the fire which gave rise to the

accident. The fire itself appears to have been confined to the fuselage of the aircraft. It seems clear, however: (1) that none of the engines had failed or developed any defect; (2) that the fuel tanks did not burst or spring a leak in the air, and (3) that while the pipe lines themselves were virtually destroyed by the fire, all the pipe connections, nuts and taps throughout the fuel system were intact and free from leakage up to the end and the exhaust pipes were in order. Further, the electrical accumulators (in the forward freight hold) had not fired. The breakage of the rear portion of the fuselage occurred at a late stage in the descent, some time after the fire had taken complete hold; the entire wing structure and the whole of the fuselage forward of the rear end of the cabin remained intact up to the moment of impact on the ground. It has been established that all precautions required by regulations prior to the flight had been fully observed.

Whilst it is regrettable that the cause of the disaster should remain unexplained, the Secretary of State is satisfied that, in view of the exhaustive and impartial technical investigations which have been carried out by two independent expert authorities, nothing could be gained by a further inquiry.

The Secretary of State desires to take this opportunity of acknowledging most gratefully the assistance afforded throughout by the Belgian authorities and the cordial co-operation extended by them to the Air Ministry Inspector of Accidents and the representatives of Imperial Airways.

The Air Mail to Australia

THE Imperial Airways' air liner *Arethusa*, which left Croydon on July 1 for the first extension services to Calcutta, arrived at its destination on July 8. It was three hours late, owing, it is stated, to the spontaneous welcome by large crowds at various points *en route*. The *Arethusa* left Karachi on July 7 with six passengers and 500 lb. of mail.

In connection with the extension of the route to Australia, the Melbourne correspondent of *The Times* states that Mr. Dunn (New South Wales), a supporter of Mr. Lang, moved the adjournment, on July 4, in the Australian Senate in order to discuss the Commonwealth Government's intentions towards the subsidy for an air mail between Singapore and Australia.

He claimed that the "outrageous patronage" extended to the Imperial Airways' liner *Astrea* (which was officially welcomed at Brisbane on June 23) indicated that the Ministry had made up its mind without giving Australian airmen or companies a chance. The Federal Auditor-General had reported that there was no real justification for such a service, and that it would be a public scandal if the Imperial Airways' tender for an unwanted service were accepted.

Sir George Pearce, the Minister of Defence, in reply, said that the Auditor-General's opinion was that of a single individual; the majority of Members of Parliament were in favour of the development of air mail services, and the Ministry was determined that Australians should be considered in connection with the award of contracts. The British Government had wished to control the proposed service as far as Darwin, but the Commonwealth had insisted on controlling the service all the way to Singapore for reasons of defence, and the British Government had agreed. Invaluable knowledge of the seas and islands on the route would be obtained from the service. Sir George concluded by assuring the Senate that the tenders for the service must be from Australian companies, and the motion was withdrawn.

Atlantic Air Service

A CONFERENCE, between representatives of the British Air Ministry (Lt. Col. F. C. Sheldermine), Imperial Airways (Lt. Col. Burchall), Pan-American Airways (Mr. A. Winslow and Maj. Logan) and the Canadian Government (Mr. J. Wilson and Mr. G. Herring), is now taking place at St. John's, Newfoundland, with regard to the establishment of an international airport in Newfoundland and a ship-to-shore air service with distributing air links operat-

ing from the airport to Canada and the United States. The question of full Transatlantic air services may also be discussed. As reported elsewhere, Col. Lindbergh has started out on a survey flight of the Arctic air route.

The Portsmouth and Isle of Wight Services

WE have received the following statistics regarding the number of passengers carried on the Portsmouth, Southsea and Isle of Wight Aviation, Ltd., Air Ferries:—

Week ending ..	June 8	June 15	June 22	June 29	July 6
Ryde and Portsmouth ..	249	196	174	198	263
Portsmouth and Shoreham ..	9	1	0	1	6
Shoreham and Isle of Wight ..	4	4	3	7	4
Portsmouth and Shanklin ..	16	4	13	2	44
Ryde and Shanklin ..	18	9	5	6	11

Derulft Report for 1932

In their report for 1932 the Deutsch-Russische Luftverkehrsgesellschaft (Derulft) announce that 981,800 km. (610,058 miles) were covered during 1932 as compared with 903,200 km. (561,218 miles) in 1931, on the same airways system; 3,610 passengers as against 3,079 (or an increase of 17.2 per cent.). Freight and mail, on the other hand, decreased 9.7 per cent. and 16.6 per cent. respectively. The report states that the ground organisation will be developed on the Berlin-Moscow route by installing wireless and D/F stations at Moscow, Kaunas (Kowno) and Welikiye-Luki, so that the Moscow-Welikiye-Luki section may be flown by night. The Derulft Co. have put new multi-engined aircraft of Russian and German construction on the Berlin-Moscow route and plan to do likewise for the extension to Leningrad. There were no casualties during 1932 operations. Mr. J. Anwelt, director of Aeroflot, was elected to the presidency instead of Mr. Holzmann, general director of Aeroflot, while Councillor Mühlig-Hofmann, of the German Air Ministry, was elected a new member of the Board.

The Mid-Atlantic Air Station

It is reported that experiments with the s.s. *Westfalen* in the Southern Atlantic have been completed, and after many tests it has been decided that the inauguration of the service with catapulted aircraft is scheduled for August. These Africa-South America services will be run every fortnight, in conjunction with the Zeppelin departures, so that they may together form a weekly postal connection.



The "Cadet" three-seater or joy-riding model. This particular machine has a "Hermes IV" engine.
(FLIGHT Photo.)

THE NEW AVRO "CADET" SERIES

A. V. Roe's have answered the demand for a modified form of their "Cadet" by producing a series which will satisfy a wide range of users, at the same time retaining the flying characteristics of the original "Cadet"

OUR readers will remember that we have often commented upon the delightful flying characteristics of the Avro "Cadet." We have had the pleasure of flying this aircraft on several occasions, and the more we do so the more we like it. No one could help liking it, and we have not heard a single serious criticism levelled against it, even by certain well-known pilots, who are notoriously hard to please.

In its original form the "Cadet" was an admirable aircraft for training, particularly where first cost was of considerable importance. It had, however, fixed wings, and was really more suitable for military training—the Irish Air Force have used it with conspicuous success—where hangar space is ample. Almost as soon as it came out there was a demand for it by private owners, and it is

this demand, along with others, which has given birth to the present series.

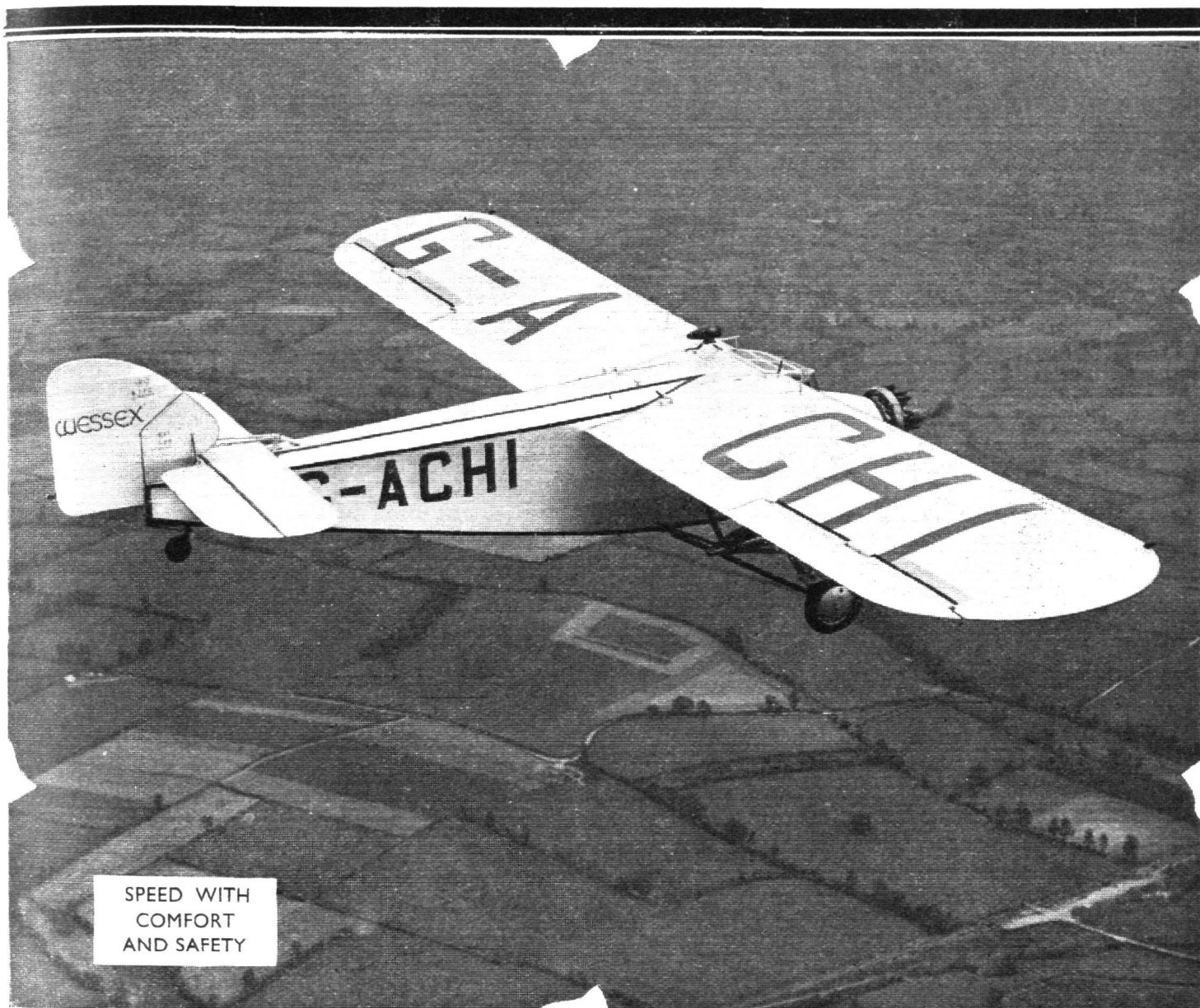
The new aircraft consist of:—

The standard "Cadet" with fixed wings	...	...	...	type Avro 643.
A Club "Cadet" with folding wings	...	...	...	type Avro 638.
A three-seater "Cadet"	...	...	...	type Avro 640.
A cabin "Cadet"	...	...	...	type Avro 639.

In its standard form the "Cadet" remains basically the same as before. It is definitely made for primary flying training or for those owners who may have some antiquated prejudice against folding wings. It differs from



THE AVRO "CLUB CADET": The introduction of folding wings has necessitated the reduction, almost to vanishing point, of the heavy stagger of the Standard "Cadet." The engine is an Armstrong-Siddeley 7-cyl. "Genet Major." (FLIGHT Photos.)



SPEED WITH
COMFORT
AND SAFETY

["Flight" Photo.]



WESTLAND WESSEX

3-ENGINE SIX-SEATER

Operated by
IMPERIAL AIRWAYS LTD.

The Westland "Wessex" is also available as an 8-seater, with the same range as the 6-seat type.

Dunlop Wheels and Tyres Standard.

WESTLAND AIRCRAFT WORKS (Branch of PETTERS LTD.), YEOVIL.



Save time by using the Air Mail.

EIGHT "42" TYPE HANDLEY PAGE AIR LINERS

HAVE NOW COMPLETED

ONE MILLION, FOUR HUNDRED AND SIXTY-EIGHT THOUSAND, TWO HUNDRED AND FIFTEEN MILES FLYING

Telegrams :
HYDROPHID, CRICKLE.

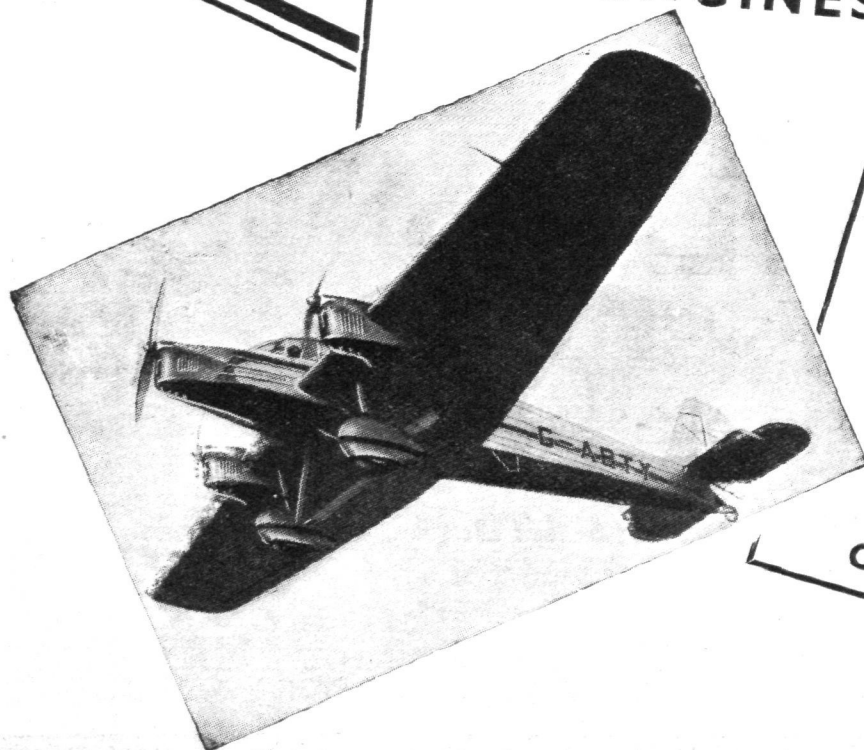
HANDLEY PAGE, LTD.
CRICKLEWOOD, LONDON.

Telephone :
GLADSTONE 5454

CLIMBS 5,000 FT.
ON ANY
TWO ENGINES

The Spartan Cruiser is designed as an extremely safe air liner affording comfortable accommodation for pilot and five to eight passengers. Outstanding of its 'safety' characteristics is its guaranteed ability to climb 5,000 ft. and maintain that height with full load on any two of its three engines. In actual tests this figure has many times been considerably exceeded—9,000 ft. being reached on one occasion.

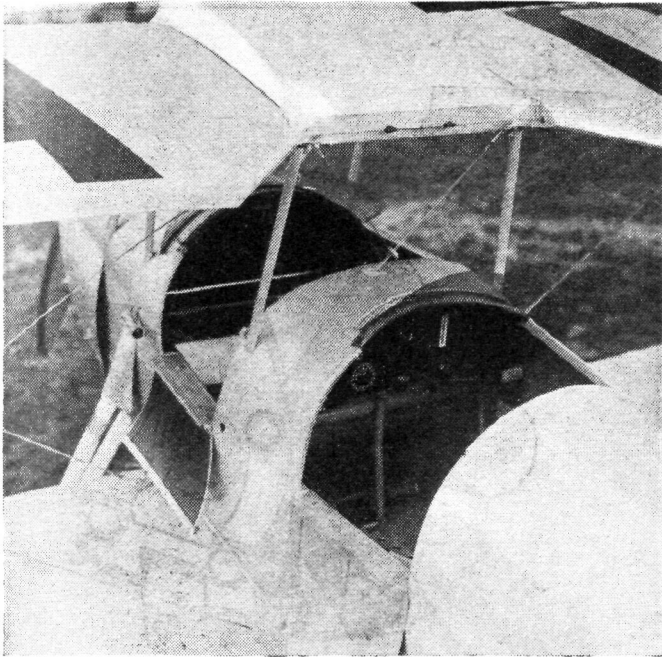
Write for illustrated folder.



**SPARTAN
CRUISER**

SPARTAN AIRCRAFT
LTD.,
COWES, ISLE OF WIGHT

Kindly mention "Flight" when corresponding with advertisers.



FOR TAXI WORK AND JOYRIDING : In the "Cadet" three-seater the front cockpit has room for two, side by side. (FLIGHT Photo.)

the previous model only in minor details like the seating arrangement. In the 643 the pilot's seat has been raised a little, thereby giving him a somewhat better view over the head of the front passenger. It will still have very full dual equipment, including the delightful Avro type, tail trimming gear, fuel control cocks, wheel brakes, adjustable rudder bars and complete instrument installation.

The 638 is mainly intended for club use or for private owners. It has folding wings, and therefore the pronounced stagger of the standard machine is greatly decreased. The fuselage remains the same, as does the equipment.

The 640 is a new departure altogether. In this type there is no question of training or dual control, and it is intended mainly for joyriding. The front cockpit has been enlarged so that it now accommodates two passengers seated side by side in comfort. The wings and tail units are the same as the 638.

The 639 is also something very new. Once again the wings and tail units are standard, but the fuselage has both been widened and extended upwards to fill the space between the top and bottom planes. The cabin so formed will accommodate three persons with the pilot in front, where he will have an excellent view.

As we have already intimated, these machines are all in a series based on the original "Cadet," and it is therefore possible, from a structural point of view to treat them together.

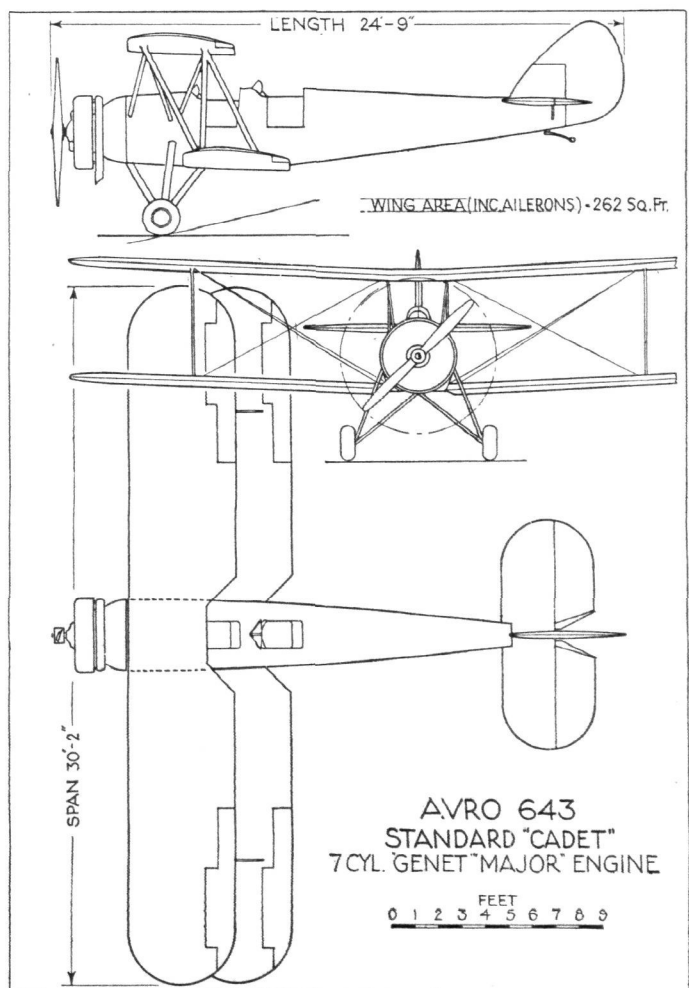
In keeping with Avro present-day practice, the fuselage is of welded-steel tube construction. Tubing of specification D.T.D.89a is used, and by this means the welding is able to be a straightforward job, not necessitating the use of pinned or strapped joints.

In FLIGHT for April 27 we gave our readers an insight into the constructional methods in use in this factory, and those methods, although in that particular case were as applied to the Avro "Tutor," are the same for the fuselages of the "Cadet." The front half of the structure, forward from the bulkhead behind the rear seat, is strut braced, and is built up as one unit. The rear half has strut braced sides, but the top and bottom has piano-wire bracing anchored to small loops of tube which are welded into the corners. The wire itself is a continuous loop led around these small pieces of tube and has an Avro strainer in it for tensioning purposes. In the three-seater, 640, the depth of the sides, particularly around the cockpits, is decreased, while the width is very much greater in order to accommodate the two passengers side by side, while there are naturally several minor differences inasmuch as there is no necessity to provide mountings for the flying controls in the front cockpit. Apart from that, however, the structure is of the same type. The cabin machine is also basically the same, although here the greatly increased

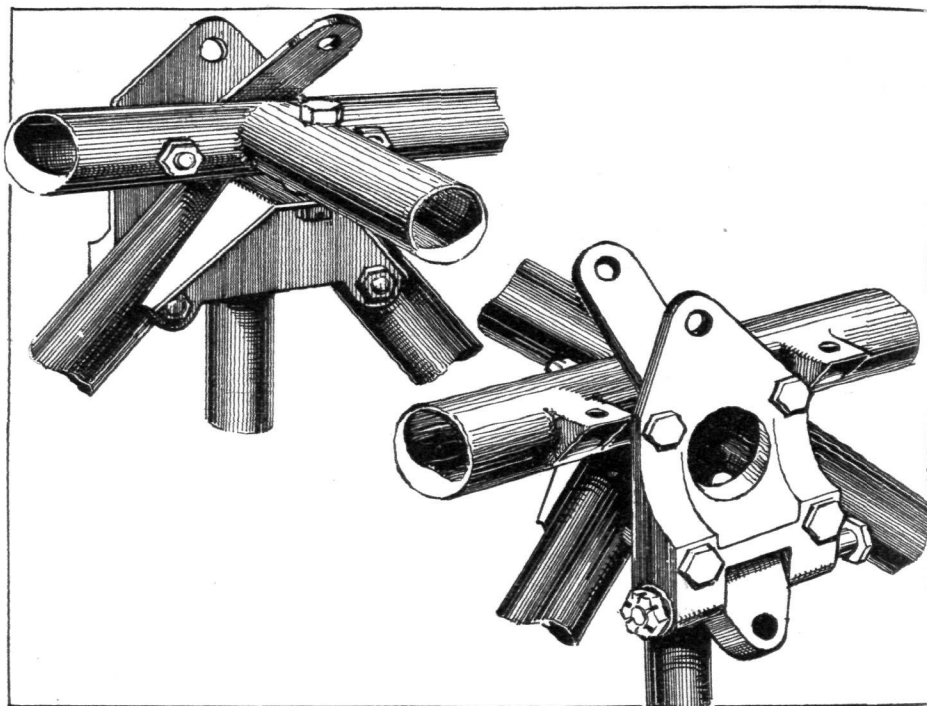
depth of the sides has enabled tube of smaller section to be used while retaining the same strength. The sides are led right up to the top centre section and form frames for the doors which hang either side and are built of steel tube themselves.

In all cases the tail skids are of the leaf-spring type, full swivelling and restrained by a check spring. The shoe is a massive casting which has a coating of a specially hard metal welded over the bottom of it, preventing the wear which would otherwise take place.

The tail plane is adjustable in flight, from either cockpit in the case of the standard and club models, by the neat screw gear raising or lowering the trailing edge which Avro's have used on their machines for some time now. The gear is operated by handwheels of ample size placed just on the left-hand side of the seats in each case, and a very fine adjustment is obtainable. This is one of the important points which makes the "Cadet" so nice to fly, it being possible to trim it exactly, whatever the conditions of load. The vertically-placed screw is worked by cables led through fairleads from the handwheels and works directly on to the trailing edge. A tell-tale is used in both cockpits showing the position of the tail plane, so that for training it is an easy matter to give a pupil marks to work to for landing, taking off or climbing, etc. The fabric covering of the rear part of the fuselage is secured over spruce stringers which are attached to the outside of the tubular structure in order to give it an efficient form. "Zip" fasteners are fitted where inspection holes are required. The three-seater, club and standard machines have a fabric-covered plywood top decking over the cockpits with large doors fitted on each side which make getting in and out of cockpits an easy matter. In the three-seater the front cockpit is also plywood lined, and over the flooring and footrest embossed aluminium is used. This gives a very clean, attractive appearance to the cockpit and has the added advantage not only of making the cockpit easy to clean—an important point for a joyriding machine—but also of keeping the passengers from sticking their fingers or feet through the sides. The footrest, a sloping board across the full width of the cockpit, is most comfortable, and should give confidence to those nervous passengers who like to "brake" hard when diving or coming into land—it is quite strong enough for the



WHERE THE SHOCK IS TAKEN :
The fitting which attaches the under-carriage telescopic leg to the fuselage on the "Cadets." (FLIGHT Sketches.)



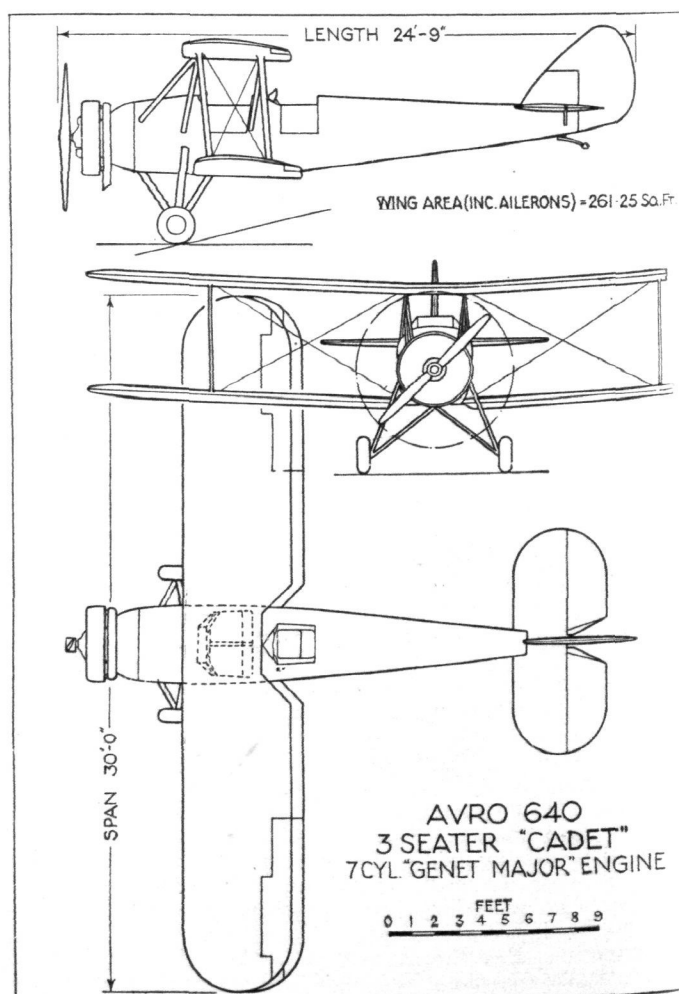
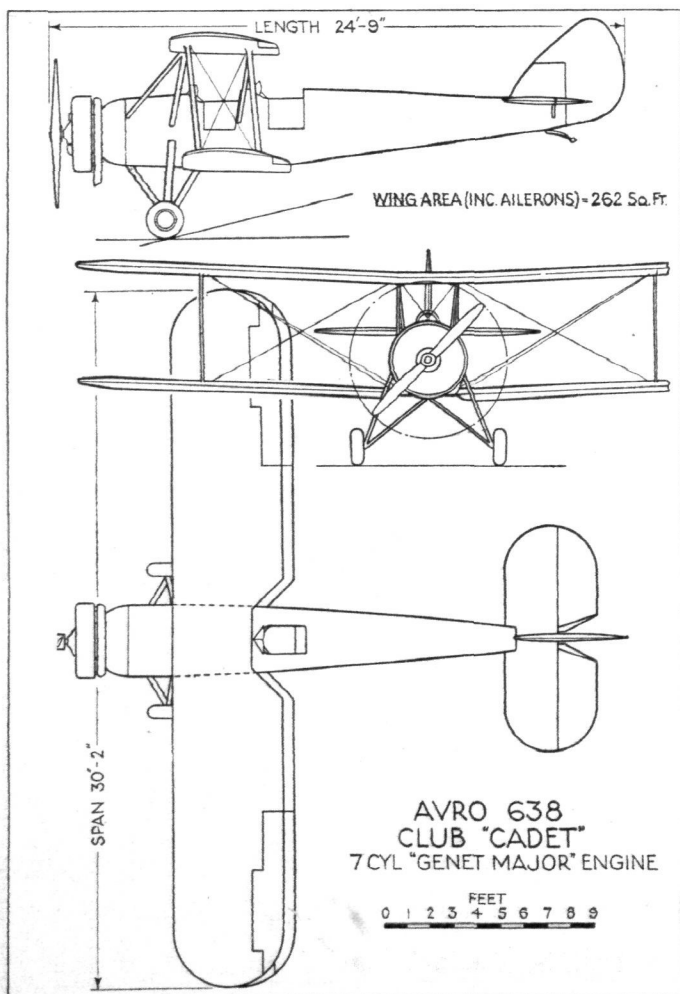
purpose too! In order to help them control their physical reactions still more, a polished rail has been mounted across the front of the dashboard which they can grip to their hearts' content, just as one sees them doing on switchback railways when they give vent to yells of terrified delight during a downward swoop. In the machine we tried, one of those which had been ordered by Scottish Motor Traction, the dashboard was bare except for an air-speed indicator, but there is ample room on it for anything, and no doubt if a luxuriously minded private owner wished to have anything else he could do so.

The engine mountings vary according to the engine fitted. The S.M.T. three-seater had a "Hermes IV" and was mounted on a cantilever steel-tube welded structure of the normal type for this kind of engine. The engine feet themselves were fitted in the flexible rubber shoes as is general practice. The cabin machine and most of the standard "Cadets" have the 7-cyl. "Genet Major" engine, so that a ring mounting has to be used. Either of these engines, or others of similar type may be fitted to any of the series.

The flying controls are all cable operated with dual cables and are particularly light and easy. As we have already said, both cockpits of the standard and Club machines have adjustable rudder bars, as well as brake-operating gear. This is similar to that used in the Avro "Tutor," the Bendix brakes being brought into action by a hand lever on a ratchet on the left-hand side of each

seat, after which operation either rudder bar releases the brake on the wheel outside of the turn. In the joyriding machine the fuel is in the top centre section, but in the standard and Club machines this is accommodated in front of the front passenger below the top decking. In the cabin machine, as in the other machines, this is contained in a welded aluminium tank, but in this instance situated below the cabin floor in a position where it can easily be removed if required. Twenty-eight gallons is the normal capacity in most cases.

The wings and other covered units are, in the interests of economy, of wooden construction carried out on normal lines with spruce spars spindled to the requisite section, in the case of the main planes, and boxed for the tail plane.



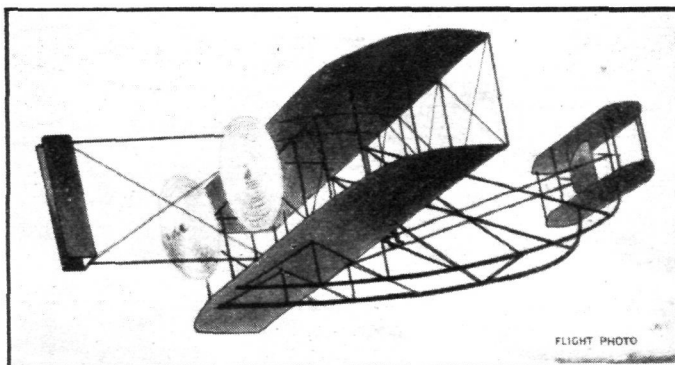
FROM
RIGHT BROTHERS
1908

A QUARTER OF A CENTURY IN AIRCRAFT

A and P Tubes have been in Aircraft almost as long as Aircraft has been in the air. Every year since 1908 has seen some improvement in tubular aircraft construction, and A and P have had a large share in all the important developments

Consult us about your tubular
problems or write for our book,
"STEEL TUBES FOR AIRCRAFT"

Ask for Book No. 21



1909—Wright Biplane.

ACCLES & POLLOCK LTD.
OLDBURY :: :: BIRMINGHAM

TO
1933

SPEED

The building of the New Hangar at Hatfield Aerodrome was commenced on April 18th and completed in ten weeks, in time to house the machines entered for the King's Cup.

Contractors:

COURTNEY & FAIRBAIRN, Ltd.
LONDON, S.E.5

Architect: A. G. STEDMAN, F.I.A.A., M.S.E., M.I^{STRUCTE}E.

Kindly mention "Flight" when corresponding with advertisers.

BROOKLANDS

FOR FLYING

... YOU GET THE MOST EXPERT TUITION

- You will be taught by the most experienced instructors in the country, men who have spent half a life-time in flying. Every piece of knowledge in every class of aviation can be made yours. You will learn on the most modern machines, an absolute essential amid the rapid progress of to-day.

CHEAPLY

- £2 an hour dual: £2—30s. solo: the rates being reduced according to hours flown and tests passed: advanced dual £2 10s. an hour: blind flying and instructors' courses £3 an hour.

COMFORTABLY

Members may reside at the Brooklands Clubhouse where there is every modern comfort and convenience; the charges are moderate. Membership of Brooklands includes membership of the Cinque Ports and Northampton Flying Clubs. The inclusive subscription is £4 4s. a year, and there is no entrance fee.

SALES DEPARTMENT

- New and second-hand aircraft of all types in stock. Brooklands are sole concessionaires for De Havilland Aircraft in the Southern Counties.

CONFIDENTIAL PURCHASE TERMS ARRANGED

BROOKLANDS
BYFLEET 436-7
LYMPNE
HYTHE 6123
NORTHAMPTON
MOULTON 43



Brooklands Flying Club,
Byfleet,
Surrey.

(Adjoining
West Weybridge
Station.)


By Appointment.

ESTABLISHED
1785


By Appointment.

Gieves

LIMITED

OUTFITTERS TO THE ROYAL AIR FORCE
21, OLD BOND STREET, LONDON, W.1
Telephone: Regent 6411.



Model No. 2.

**New Perfect Fitting
FLYING HELMET
Schneider Pattern**



Model No. 3.

HELMETS
for both MEN and WOMEN,
IN LINEN, from 18/6
All the latest models stocked

GOGGLES
from 10/6

Price 35/-
or with ear defender 42/-



Smoke PLAYER'S AIRMAN MIXTURE

The finest mixture
at 10^D per oz

ALSO PLAYER'S 'AIRMAN' NAVY CUT
DE LUXE AT 11^D PER OZ.

PA 32

Kindly mention "Flight" when corresponding with advertisers.

WITH "HERMES IV": The three-seater "Cadet" can be supplied with this and similar in-line engines instead of the "Genet Major." (FLIGHT Photo.)



fin and rudder. Spruce ribs form the aerofoil section for the main planes and steel tubes with swaged wires make up the drag bracing. Following usual Avro practice, the aileron hinges are of ample size so that no wear need be expected under ordinary conditions of use. The undercarriage is practically the same in each case, the compression leg being led to the top longeron, and being of very small cross section. The land shocks are taken by a series of three springs working in parallel, the rebound being catered for by an Oleo restriction arrangement. Dunlop medium-pressure tyres are fitted on the wheels and Bendix brakes. The three machines whose wings fold, that is, the three-seater, Club "Cadet" and cabin machine, have the top centre section farther aft than in the case of the standard machine, and the wings fold about the rear spar root joints.

In the cabin machine the top centre section is clear as the fuel is below the floor and the cabin roof is therefore covered with cellastoid, giving the cabin a particularly light and roomy appearance, which entirely negates any boxed-up feeling and also gives the pilot a reasonable measure of backward view. In this machine the seating arrangement will be such that the pilot sits by himself in the front, behind a safety glass windscreen of large size.

He sits higher than is usual in machines of this type and gets a particularly good view in consequence. Immediately behind him one passenger is catered for on a seat, the base of which is an elektron casting. This seat is on runners and slides to the right-hand side of the machine when three passengers are carried or to the centre of the machine when it is desired to use dual control. Behind this seat a plywood bench, well upholstered, goes right across the machine. This is fully large enough for two children or one adult.

Luggage can be carried beside this passenger behind the middle seat and also beside this middle seat.



THE STANDARD "CADET": This forms the prototype of the "Cadet Family," and is characterised by a pronounced stagger of the wings. The engine is a 7-cyl. "Genet Major." (FLIGHT Photo.)



F. M. Green leaving Siddeley's

READERS of FLIGHT will probably learn with some surprise that Maj. F. M. Green, O.B.E., has arranged to give up shortly his duties as Chief Engineer of the Siddeley group of aircraft and aero engine companies, a position which he has held since 1917. We are informed that Maj. Green proposes, after a well-earned holiday, to establish himself as a consulting engineer, a position in which his wide experience of all branches of aeronautical engineering should enable him to do good work in the development of civil aviation. Fred Green has been connected with flying since its earliest days. Early in 1910 he left the Daimler Co., where he had been engaged on design work of various kinds for several years, and became engineer in charge of design at the Royal Aircraft Factory (as it then was) at Farnborough, under Col. Mervyn O'Gorman. In

1917, at the request of the late General Sir David Henderson, Maj. Green joined the Siddeley Deasy Motor Co., chiefly to help in the development of the B.H.P. engine, which later became known, in its production form, as the Siddeley "Puma" engine. While the "Puma" was being developed, experimental work was begun on a 14-cylinder radial engine, which later became famous as the "Jaguar." During the same period work was begun on the design of a single-seater fighter intended to replace the SE5, and to be fitted with the Siddeley radial engine. Mr. Lloyd joined the staff shortly after this design was started, and has remained actively engaged on aircraft design at Armstrong Siddeley's and Armstrong Whitworth's to the present day, as chief aircraft designer. We understand that Maj. Green intends to make a close study of civil aviation on the Continent and in the United States before settling down to his work as a consulting engineer.

From the Clubs

HANWORTH (N.F.S.)

Club flying for the week amounted to 111 hr., Club machines being kept busy until late in the evening. Many members flew up to Speke for the opening of the Municipal Airport, at which the Master of Sempill's "Puss Moth" tied with the Duchess of Bedford's machine for second place in the Concours d'Elegance. Cross-country flights included Mr. Borley, with Capt. Findlay, to Speke; Mr. Whitelaw to Bournemouth; Mr. Kirwan to Northampton and return, and Mr. Anson, with Capt. Findlay, to Canterbury and Crondall. On Friday, July 7, Capt. Findlay flew to Manston early in the morning to collect Mr. Leslie Fuller, the comedian, whom he flew to Elstree, returning the same night. Mr. Fuller is making the same journey every day. Prince George called in at Hanworth several times during the week in the "Dragon" G-AAGG. The Vacuum Oil Company's "Dragon" has also been housed at Hanworth for several nights. Lord Grimthorpe called in on Wednesday, July 5, and Sqd. Ldr. Wynne Eaton is now back from Munich and Mr. Everett from Ireland. On Saturday, July 8, the Inns of Court Regiment held their regimental gymkhana at Hanworth. Two new "A" licence holders are Mr. von Bahr and Mr. Sandys.

MAIDSTONE AERO CLUB

There has been an increase in the number of hours flown during the past few weeks, and a number of trial lessons have been given to competitors in the *Daily Express* scheme. Several members have recently gone solo and should soon be obtaining their licences. The Club are now preparing for their official opening, which will take the form of a large garden party with a few air events. Entrance will be free, and the opening ceremony will be performed by Lord Clydesdale. During the past week 130 boys from the Maidstone Grammar School were entertained by the Club.

CINQUE PORTS FLYING CLUB

On Saturday and Sunday, July 22 and 23, a special meeting is being organised by the Cinque Ports Flying Club. About 50 representative foreign pilots are being invited to attend, that some return of hospitality may be made for what has been done abroad for English pilots. It is hoped that the expense of entertaining these visitors will be defrayed by the gate takings, and to attract people an interesting programme of flying is being arranged. On the Saturday there will be an arrival competition

between 12 and 12.30 a.m., a luncheon from 1 to 2.45 p.m., followed by a fly past of all competing machines. Other events will include dual aerobatics by Flt. Lt. W. E. P. Johnson and Mr. Nigel Tangye on Comper "Swifts," a display of inverted flying on a "Tiger Moth" by Flt. Lt. C. Clarkson, aerobatics by Flt. Lt. G. Stainforth, crazy flying by Mr. G. Lowdell, a parachute drop and a display of aerobatics in formation by No. 25 Fighter Squadron. A race of international nature is being flown for prizes of £50, £25 and £10, and for the Cinque Ports Wakefield Cup. The heats will be flown on Saturday evening and the final will be the opening event on Sunday.

HERTS AND ESSEX AEROPLANE CLUB

The annual display of the Herts and Essex Aeroplane Club will be held at Broxbourne on Saturday next, July 15, starting at 3 p.m. No. 29 Fighter Squadron will take part in the programme. A bombing competition will be held and an interesting event will be the first public demonstration of grass-track car racing on the aerodrome. Visitors by air will be welcomed at any time during the day and made hon. members of the Club for the occasion. Visitors are asked to arrive before 3 p.m., that they may take part in the parade and fly past. The opening ceremony will be performed by Miss Bebe Daniels and Mr. Ben Lyon. Many other film stars will also be present.

READING AERO CLUB

Flying times between Thursday, June 29, and Thursday, July 6, totalled 40 hr. 55 min., and for the month of June 159 hr. 20 min. During the week cross-country flights were made to Heston, Hanworth, Gloucester, Portsmouth, Stag Lane and Hendon. The third hangar is now complete, and the "Hawk" workshops have been considerably enlarged in the second one. The first production "Hawk" entered for the King's Cup was unlucky, for one of the pushrods jumped out. The machine was later flown back to Hatfield and demonstrated by Mr. Miles.

NEWCASTLE-UPON-TYNE AERO CLUB

The London to Newcastle Air Race will be flown on Saturday, August 12. It will start from Brooklands Aerodrome and should finish at Cramlington Aerodrome at about 4 p.m. The first prize is £75 and the "Newcastle-upon-Tyne" Trophy, the second prize £20 and the third prize £10; there is also a special prize of £10 for the fastest time. The race is open to all types of aeroplanes.



GATWICK FROM ABOVE : An aerial view of the Gatwick Aerodrome, headquarters of the Surrey Aero Club. (Flight Photo.)



BY APPOINTMENT



18ct. Gold and Enamel Links.
Per pair, £7.0.0



Platinum, 14ct. Gold and Enamel Brooch,
with Rose Diamond Monogram £3.17.6



Platinum, 14ct. Gold and Enamel Brooch,
with Rose Diamond Monogram £4.10.0



Rose Diamond, Platinum, 18ct. Gold
and Enamel Brooch ... £8.0.0

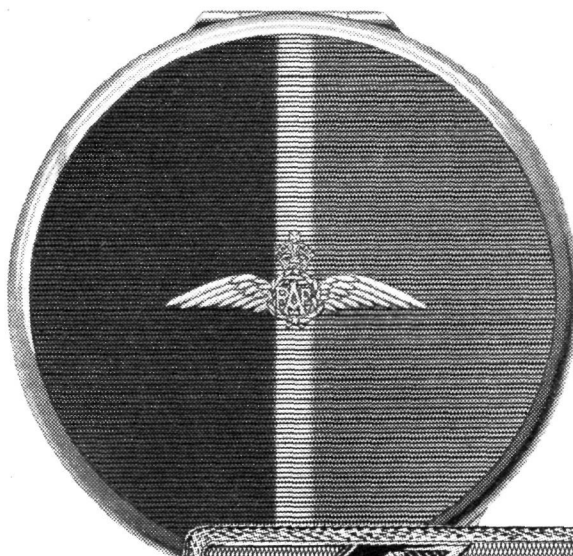


Rose Diamond, Platinum, 18ct. Gold
and Enamel Brooch ... £10.0.0

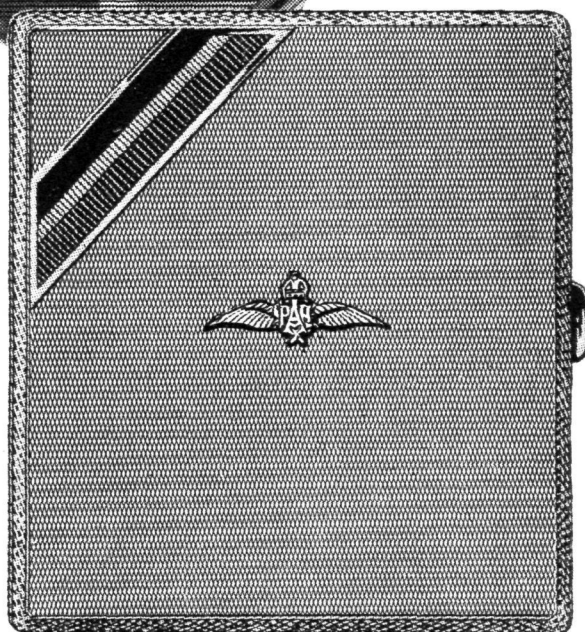


Rose Diamond, Platinum, 18ct. White
Gold and Enamel Brooch ... £17.0.0

The Royal Air Force



Sterling Silver Flap Jack,
with colours in Enamel
and mounted with
badge in Sterling Silver,
dia. 3 ins. ... £2.10.0



Sterling Silver Cigarette Case, with colours in
Enamel and mounted with badge in Sterling
Silver. Size $3\frac{1}{4} \times 3\frac{5}{8}$ ins. ... £3.5.0

MANY appropriate "Gift" Suggestions, including Badge Jewellery, Cigarette, Match, and Vanity Cases enamelled in colours, Watches, Smokers' Requisites, etc., will be found at the Goldsmiths & Silversmiths Company.

Illustrated catalogues sent upon request.

THE GOLDSMITHS & SILVERSMITHS COMPANY LTD.

Jewellers and Silversmiths to H.M. The King

112, REGENT STREET, LONDON, W.1

(Corner of Glasshouse Street)

Save time by using the Air Mail.

MALLITE AND APPCO PLYWOOD

SPECIAL ATTENTION TO DECORATIVE CABINS


RELIABLE FOR AERO and SEAPLANES

USED BY THE LEADING AIRCRAFT MANUFACTURERS
THROUGHOUT THE WORLD

MANUFACTURED TO THE BRITISH AIR MINISTRY SPECIFICATION 4.V.3 BY
The AERONAUTICAL & PANEL PLYWOOD CO. LTD., 218-226, Kingsland Rd., LONDON, E.2.

TELEPHONE
BISHOPSGATE
5841
(4 lines)

TELEGRAMS
VICPLY
BETH
LONDON



THERE'S NO DOUBT

That the highest quality lubricant for aero-engines is

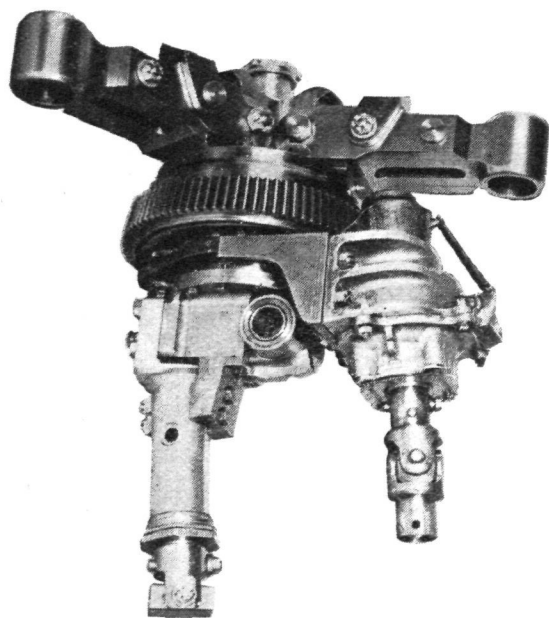
Speedolene

AERO OIL

ONE GRADE ONLY
FOR
WINTER & SUMMER



SILVERTOWN LUBRICANTS LTD.
Minoco Wharf, West Silvertown,
London, E.16.



The Heart of the Autogiro

as manufactured for the latest type
DIRECT CONTROL C.30
to the order of the Cierva Autogiro Co.
was machined from bar and assembled by—

The MOLLART ENGINEERING CO.
Thames Ditton, Surrey.

A. J. MOLLART, M.I.P.E.
J. C. HENDRA, M.I.P.E.

Telegram }
Telephone } Emberbrook 1846.

Makers of Limit Gauges, Jigs, Fixtures, Press Tools, Screw Gauges.

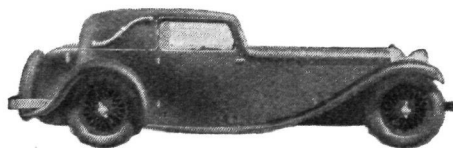
BUY far the BEST CARS

- Every car over £100 guaranteed.
- Unique exchanges and deferred terms.
- Our reputation is your complete protection.
- Here are a few examples:—

1933 MARENDAZ Special 12.9 h.p. 4-str. Sports. Black and green. Fitted outside exhaust and down draught carburettor; wire wheels; chromium plated fittings. Beautifully kept. Excellent condition throughout. A genuine sportsman's bargain. £240
1932 ALVIS 12/50 h.p. Coachbuilt Saloon. Negligible mileage. Like new throughout. £330
1932 ROVER Meteor Gazelle 20 h.p. 6-cyl. 90 m.p.h. model fitted with special Maddox Foursome Coupe body with sunshine roof. Beautifully finished in green and black.

Magnificent condition throughout. £365
1929 BENTLEY 4½-litre 4-dr. Saloon Weymann type. Very fast with exceptionally fine road performance. Marvellous condition throughout. £395
1933 INVICTA 12/90 h.p. Coachbuilt super-charged Saloon. Sunshine roof. Practically unused. Very small mileage. New condition throughout. £455
1933 ALVIS Speed "20" Coachbuilt Sports Saloon. Black and cream. Very small mileage. Absolutely like new. £695

Full list on request



And nearly 600 other excellent examples, at prices from £25—£1,000

ENGLAND'S LEADING MOTOR AGENTS,
Henly House, Euston Road, N.W.1.
Museum 7734 (100 lines).
Branches throughout
London, Manchester,
Bristol & Bournemouth.
Aviation Dept.: Heston
Aerodrome, Middlesex.

AT

HENLYS

Kindly mention "Flight" when corresponding with advertisers.

and will be flown on handicap. There is no weight restriction. Competitors are required to pass over Sherburn Aerodrome, Yorks, between 200 and 400 ft., so that their numbers may be taken. The entrance fee is 3 guineas per machine; late entries after July 25, and until August 2, will have to pay 5 guineas. Two white arrows will be laid down on Sherburn Aerodrome pointing north, and all competitors must pass in between these arrows. The finishing line will also be between two arrows.

BROOKLANDS

Hours flown during the week totalled 83. New pupils are Messrs. Hanau, Simpson and Phillips. Regular pupils from the Aeronautical College include Messrs. Griggs, Knight, Mann, Crossley, Sawyer and Needham. Messrs. Stevens, Crossley and Sawyer have been on cross-country flights, and Messrs. Voute and Talbot have done height tests for "A" licences.

GRAVESEND SCHOOL OF FLYING

Gravesend School of Flying have been very busy lately, the staff being kept very busy testing candidates for the *Daily Express* scholarship scheme. Three first solos have been made by Messrs. T. Atkins, J. Atkins and Wheeley, and Mr. Mitchell celebrated the passing of his passenger-carrying tests by giving flights to a large number of friends. Mr. Ward, who has just started a blind-flying course, is finding the difficulties due to northerly turning error greater than he expected. F/O. H. L. Piper, R.A.F.O., has joined the instructional staff. He learned to fly in New Zealand in 1918, joining the R.A.F. in 1927 and being posted to No. 5 F.T.S., Sealand. In 1930 he flew a Desoutter to Australia, and on return to England was posted to C.F.S.

HULL AERO CLUB

On Saturday, July 15, and Saturday, July 29, Club Night dances will be held as usual. Aviation Days will be held on Thursday, July 20, and Saturday, July 22, the visitors being Messrs. Woolworths, Ltd., and the Kingston-upon-Hull Motor Cycle Club. On Saturday, July 8, the Hull Auto Cycle Club visited the aerodrome. Members are again reminded that admittance to the dances can only be obtained upon the production of either a membership card or club badge; non-members must possess a voucher signed by a paid-up member of the club. Owing to lack of support the transport system on dance nights will be discontinued. Sundays are as busy as ever, but more members are asked to come along and make the aerodrome a popular resort. The loud-speaker equipment provides everyone with amusement and entertainment. It is hoped that the many business men who belong to the club will use the new Humber Ferry Air Service when travelling to Grimsby.

SCARBOROUGH AERO CLUB

A civil air display on a large scale is being organised by the Scarborough Aero Club for August Bank Holiday, Monday, August 7, at Ganton Aerodrome, East Heslerton, Yorks. All civil pilots and private owners will be welcome. In the evening a midnight bathing party will be held at Scarborough. The display is being organised by Mr. William Courtenay, to whom inquiries should be addressed.

YORKSHIRE AEROPLANE CLUB (N.F.S.)

Approximately 42 hr. were flown on Yorkshire Aeroplane Club machines during the past week. One new member, Mr. D. V. Marshall, of Leeds, has joined. Visiting aircraft included Lord Clydesdale's "Gipsy III Moth" and Mr. Bentley's Comper "Swift." Arrow Aircraft, Ltd., recently had the two Arrow "Actives" entered for the King's Cup tested at Yeaddon by Flt. Lt. Healy and F/O. H. Leech. Several club machines flew to the R.A.F. Display at Hendon.

Two Killed in Irish Crash

WHILE taking part in the display organised by Sir Alan Cobham at Limerick on July 7, a "Gipsy Moth" of the Irish Aero Club (piloted by the chief instructor, Mr. W. R. Elliott) collided with a "Fox Moth" flown by Mr. Geoffrey Tyson, one of Sir Alan's pilots. The "Gipsy Moth" crashed from a height of about 500 ft.; both Mr. Elliott and his passenger, Mr. William Owens, of Newcastle West, County Limerick, were killed. Although the undercarriage of the "Fox Moth" was badly damaged, Mr. Tyson succeeded in landing the machine, and neither he or his two passengers were injured. Mr. Elliott's machine had just taken off and was climbing when the undercarriage of Mr. Tyson's aeroplane, which was travelling in the opposite direction, struck the wing of the other aircraft. Mr. Elliott was an ex-sergeant pilot of the Royal

EASTERN COUNTIES AEROPLANE CLUB

Total hours flown for the past month were 44 at Ipswich and 22 at Blue Barn, Colchester. First soloists were Miss M. Warner and Mr. W. Johnston. Cross-country flights were done by Miss Turner, Maj. MacEwan and Mr. Marriage. As an experiment a week's joyriding by night was organised and 6 hr. 45 min. were flown. The following pilots took part:—Miss Warner, Mrs. Horsman, Maj. MacEwan, Messrs. N. Baynes, N. Barne, W. Johnston, R. Johnston, P. McClean, E. Sellick and W. Shaw. A successful grass track meeting has been held at the branch aerodrome.

SOUTHEND FLYING CLUB

There was a large gathering of members and friends last Saturday, July 8, for the tea party given by the Southend Flying Club at the Rochford Aerodrome. Several visiting aeroplanes arrived, including Mr. Brian Allan with Mr. Humphrey Coysh in an Avro "Tutor," Mr. Campbell Black in a "Puss Moth," Mr. Page in a "Monospar" from Heston, Mr. MacLoughlan in a "Moth" from Hatfield, Mr. Cook in a "Moth" from Maidstone, and Mr. Scholes. Mr. Allan and Mr. Black gave some fine exhibitions of aerobatics and Mr. Page's handling of the "Monospar" was much appreciated. An item of interest was a display of Skybird model aeroplanes and completely-equipped aerodrome by the youthful Southend members of the Skybird League. On Saturday night the aerodrome was floodlit by car headlights and flares for Mr. Roper Brown to land.

SOUTHERN AERO CLUB

On Tuesday, July 4, a visit was paid to the aerodrome by the Prince of Wales in his D.H. "Dragon," piloted by Flt. Lt. Fielden. Cross-country flights were made by Messrs. G. H. Miles and V. N. Buchan to Reading and Christchurch. On Saturday, July 8, the aerodrome was loaned to the R.A.F., who were demonstrating co-operation with the Buffs. The Club was pleased to welcome back several old members during the week, as well as some new ones.

CARDIFF AEROPLANE CLUB

Entries are invited for the London to Cardiff Air Race (entry forms should be sent to the Secretary, Cardiff Aerodrome). All visiting pilots will be welcome; a dinner dance has been arranged for the evening and a golf tournament will be held at the Royal Porthcawl Golf Club.

SOARING BY MEANS OF THERMAL CURRENTS

What is considered to be the first soaring flight by means of thermal currents was made on July 4 by Mr. G. E. Collins, the British Gliding Association's instructor, at the school of gliding and soaring which is now established at Huish Hill, near Marlborough. He was towed up to a height of 500 ft. into an area of thermal current, which enabled him to rise to an altitude of 2,000 ft. He took off in a westerly direction and gained height the whole time. After travelling over the village of Allcannings, some ten miles away, he returned to his starting point. It is interesting to note that this performance was made on an intermediate two-seater B.A.C.7 sailplane which was designed by the late Mr. Lowe Wylde. To make a performance of this nature, carrying a passenger, not only showed that thermal soaring is possible, but that if high efficiency sailplanes were available, much scientific research in meteorology could be carried out. As a result of Mr. Collins' flight further efforts are to be made to carry out as much research as possible during the time the school is in existence. It has always been the aim of the B.G.A. to carry out experiments of thermal soaring, and this has given the official much satisfaction.

Air Force, and had been chief instructor of the Irish Aero Club for two years. He was particularly popular with all associated with flying in Ireland. Mr. Elliott leaves a widow and one child.

New Aerodrome at Aleppo

THE MUSLIMIEH AERODROME at Aleppo has been closed down, and a new one situated at Neirab has been opened. This new aerodrome is three miles from the town, compared with the 12½ miles which separated the old one from Aleppo.

Blue Barns Aerodrome for Sale

BLUE BARNS AERODROME, Colchester, operated by the Eastern Counties Aeroplane Club, is to be sold. It consists of 57 acres and possesses a hangar, power house and car park.

EGYPTIAN INTERNATIONAL AVIATION MEETING

THE second International Aviation Meeting, to be held in Egypt, will take place in Cairo, from December 19-23 of this year. The meeting will be held under the Sporting Regulations of the Fédération Aéronautique Internationale. The object is to stimulate an interest in aviation, and to emphasise the advantages presented by the use of aircraft. During the meeting three contests will be held: "The Circuit of the Oases," which will be a touring contest over a course of about 900 miles; a Speed Contest over a distance of about 230 miles; and the Oases Trophy, which will be an aggregate contest for a prize to be awarded to the competitor gaining the highest total of points in the two other contests. The rules lay down that every machine must be equipped with a compass, an altimeter, an air speed indicator, and a rev. counter, each machine must also carry sufficient fuel and oil for a minimum of 300 miles at cruising speed. Desert equipment, including a set of ground strip signals, a card ground strip signal code, a small mirror for flashing, two smoke candles and one box of safety matches, must also be carried. Rations on the machine must include a gallon of water, and two days' emergency rations for each person.

"The Circuit of the Oases" will be flown in two days. The course will be south to Assuit, and south again, but across the desert, to the Oasis of Kharga, where the night will be spent. On the following day the competitors will set off northwards to the Oasis of Farafra, north once

more to the Baharia Oasis, and north-east to Cairo and the finish. Landings must be made at all the Oases mentioned.

The race should be an excellent test of navigation even if the visibility is good. The flight south will be easy, from a point of navigation, for the blue ribbon of the Nile provides an excellent landmark, but after that the pilots will have to rely nearly entirely on their compasses, for the Lybian desert provides few landmarks. The dangers of forced landings are by no means negligible, for although most of the country over which the machines will fly provides quite good forced landing ground for small machines, there are stretches of soft sand dunes, in which a forced landing might easily mean minor injuries resulting in many unpleasant hours, perhaps even days, being spent in the desert before help arrived. Cash prizes amount to about £1,500 sterling.

In connection with this meeting it is interesting to note that the first International Aviation Meeting to be held in Egypt took place from Sunday, February 6, to Sunday, February 13, of the year 1910 (the meeting was described in issues of *FLIGHT* for February 12 and 19 of that year). The pilots included Rougier, Latham, Metrot, Le Blon, Balsan, Grade, and Duray, and the machines they flew a Voisin, Antoinette, Blériot, Grade, Farman, and Curtis. A little over 10,000 ft. won a height contest, the longest distance flown was about 54 miles, and the greatest average speed attained 47 m.p.h.



THE N.P.L.

THE National Physical Laboratory which, as was briefly reported last week, was inspected by the General Board on June 27, has within its walls a very great deal of interest for aeronautically-minded people.

The Compressed Air Tunnel, being one of the latest additions, was perhaps the centre of interest. It will be remembered that we were able first to illustrate this in *FLIGHT* for June 3, 1932, and to report on the occasion when this was first shown to the public on March 13, 1933. The tunnel is being used, at present, to establish standard aerofoil data at full-scale Reynolds numbers, including also, the effect of attachments like slots and flaps.

The main aerodynamics building contains a Duplex tunnel and also both a 7-ft. and 4-ft. tunnel. The first was shown with a model of a "Puss Moth" in position for measuring the elevator hinge moments with the air-screw running. The 7-ft. tunnel was being used for research on high-pitch airscrews, while the smaller tunnel was equipped for experiments on the subject of "buffeting." This is particularly interesting, for it will be remembered that the subject came into prominence after the German report on the Meopham crash on July 21, 1930, which involved the breaking-up of a Junkers low-wing all-metal monoplane. It was shown that at high angles of incidence the wing appears to shed a succession of eddies which cause severe vibration of the tail plane. The airflow over the

wing was shown by wool tufts, and the effect of a leading edge slot, in smoothing out the flow at high angles of incidence, was clearly demonstrated, an effect which also greatly reduced the tail plane vibrations.

In the east aerodynamics building a 7-ft. tunnel was being used for spinning research, particularly with regard to the effect, during a spin, of tip slots and interceptors. In a 4-ft. tunnel the effect on stability at low speeds of various wing tip forms was being investigated. In another part of the building a whirling arm was so rigged that the rotary derivatives involved in the study of lateral stability of aeroplanes could be measured.

The middle aerodynamics building contained the Open-Jet tunnel. This has only recently been completed, and the elliptical jet, measuring 9 ft. by 7 ft., is capable of delivering a flow of up to 200 ft. per sec.

Apart from these and other smaller purely dynamical demonstrations, the two water tanks in the William Froude Laboratory were visited by everyone connected with aviation, as, besides tests on the hulls of ships, the tanks may be used for determination of the best form of flying-boat hulls and seaplane floats.

The visitors were received in the high-voltage laboratory by Sir F. Gowland Hopkins, President of the Royal Society and Chairman of the Board; Lord Rayleigh, Chairman of the Executive Committee, and Sir Joseph Petavel, the Director of the N.P.L.



Economic Conference Delegates at Trent

SATURDAY last Sir Philip Sassoon, Under-Secretary of State for Air, was "At Home" at Trent Park, to the delegates to the Monetary and Economic Conference. A big gathering of prominent people had accepted Sir Philip's invitation to meet the delegates, and a delightful afternoon resulted to all those fortunate enough to be amongst the guests. Lady Cholmondeley, Sir Philip Sassoon's sister, acted as hostess. The weather was kind, so that the lovely gardens—not forgetting the beautiful herbaceous borders—which were at their best, were a delight to the hundreds who roamed about the grounds. The open-air swimming pool was also a centre of attraction. Conspicuous amongst the guests was the Prime Minister and his daughter. That the tea and strawberries in the several marquees were thoroughly appreciated was evidenced by the "patronage" which they commanded during this memorable function.

Fairey Aircraft for Peru

Six Fairey "Seal" machines, equipped with Arm-

strong Siddeley Panther IIa engines, purchased by the Peruvian military air service, have arrived at Lima.

Aero Golfing Society

THE *FLIGHT* Challenge Cup was competed for at Camberley Heath Golf Club on Thursday, June 22. There was a good turn out of the members of the Aero Golfing Society. Major R. A. Mayo, 82 less 7 = 75, won the *FLIGHT* Challenge Trophy. Capt. C. D. Barnard and E. Fulford won the Four Ball Foursomes with a return of 7 up on bogey.

Air Crash in Nairobi

A REPORT from Nairobi states that Capt. Richard Ussher and his wife crashed in the mountains 30 miles from M'beya while on their honeymoon to South Africa. At the time low lying clouds were hiding the mountains, and it is thought that Capt. Ussher hit the ground a few hundred yards from the summit.

Airport News

CROYDON

A CONSIDERABLE amount of interest was caused by the arrival at 4 p.m. on Thursday, July 6, of Princess Ingrid and her younger brother, Prince Johan of Sweden. They had travelled by K.L.M. Air Line from Copenhagen. Nine passengers were aboard the 'plane and the first to alight was the Princess, followed immediately by her brother. Smilingly she stepped forward to shake hands with the representatives of the Duke of Connaught. She was also welcomed on behalf of the Air Ministry by Major Leslie F. Richard, Chief Officer of the Airport, and Capt. H. Sprey Leverton on behalf of the K.L.M. The Princess then asked to speak to the pilot, whom she thanked for bringing her safely to Croydon. Princess Ingrid described the flight as being excellent and stated that she had thoroughly enjoyed it. As royal visitors enjoy diplomatic privileges, it was not necessary for them to pass Customs and immigration officials. The Duke of Connaught's private car was waiting on the tarmac for them; they stepped into this and left immediately for a London address—they are staying with the Duke of Connaught.

A new flight instructor, Mr. R. S. Bulstrode, has been appointed to British Air Transport at Addington. Mr. Bulstrode took over his duties in charge of the flying school on Sunday, July 9. Formerly he was instructor at the Maidstone Airport.

I am informed by Mr. R. Jahn, the D.L.H. Manager at Croydon, that the trial flights across the South Atlantic carried out in connection with the floating airport, s.s. *Westfalen*, have been very satisfactory. Several flights from the African to the South American coast have been made with complete success, and a regular service will be inaugurated in the autumn. The two flying boats "Mon-sun" and "Passat" returned to Germany on the 8th. They left Las Palmas on Thursday, the 6th, and flew by stages via Cadiz, La Coruna and Southampton to Travemuende. Particularly fast trips were achieved between Cadiz-Southampton—the flight only took 4 hr. 45 min.—and from Southampton to Travemuende 5 hr.

Also, on Saturday, the catapult machine of the s.s. *Europa* landed the N. American mail at Southampton. The distance flown from the ship was 710 miles. The staff

at Woolston, the new approved Customs airport at Southampton, were constantly kept busy that day by the arrival of the D.L.H. Seaplanes.

Mrs. Bonney, the Australian airwoman, visited the Airport on Sunday. Mrs. Bonney explained to me that she had intended, on her arrival in England, to land at Heston, but owing to bad weather had acted on advice and landed at Croydon. She had come down to take the machine over to Heston in order to see friends. "Later," she said, "I shall take my machine to Stag Lane, as I want to acquire a faster aircraft for my return flight to Australia."

On Monday, July 10, the D.L.H. had a special charter for the German Government to bring Dr. Schacht, President of the Reichbank (who has been attending the World Economic Conference) from Berlin to Croydon. Dr. Schacht arrived at Croydon shortly after 11 a.m. The airliner in which he travelled was one of the well-known "Rohrbach" type. This machine has recently been modified by the D.L.H. Spats have been fitted to the wheels and the speed of the machine increased, so that she now cruises comfortably at 125 m.p.h.

Prince Adolph Gustav and Princess Sybilla of Sweden arrived at Croydon shortly after 4 p.m. on Monday in a Dutch air-liner from Copenhagen. They were met by the Swedish Minister in London, at the Airport. For a moment the Prince and Princess faced a battery of cameras, then they spent a few minutes in conversation with Capt. H. Sprey Leverton, of the K.L.M., to whom they expressed their complete satisfaction of the flight. They left almost immediately by private car.

A new air line company, known as International Airlines, Ltd., has been formed with registered offices at Croydon Aerodrome. What activities the company intend to carry out have not yet been divulged, but it is expected an announcement in this direction will shortly be made by one of the directors.

Mr. Colyn, the Dutch Prime Minister, left Croydon at 7 p.m. on Monday, July 10, by Royal Dutch air-liner for Rotterdam.

The total number of passengers for the week was 2,438. Freight 85 tons 10 cwts. HORATIUS.

FROM HESTON

ONE and a-half tons of bullion arrived at Heston in an aeroplane from Zurich on July 7 and were taken to London under police escort. Members of the staff experienced (under supervision) the rare sensation of rubbing an itching finger along a bar of gold, which, incidentally, weighs so much more than lead that the whole of this shipment occupied less than 3 cu. ft. of space.

"Good old England! Greetings from Czechoslovakia!" runs a message scrawled on Mr. Tony Gibbons' Klemm, now safely stowed in a Heston lock-up after thrilling adventures in the Austrian Alpenflug, which, it will be remembered, included an unsuccessful attempt at towing by another aeroplane after a forced landing. The machine proceeded home across Europe by canal and railway in a crate.

The British Air Navigation Co. and Birkett Air Service both carried out urgent Press charter flights to Poland in connection with the release of the British prisoners from Moscow. Returning with photographs from Stolpce on the frontier, Capt. Birkett was 100 miles on his way before the prisoners left the town, and Capt. Styran, in the B.A.N. Co. machine, completed his trip by flying non-stop from Berlin to Heston in 5 hr. and 10 min.

The two Misr-Airwork "Dragons," whose departure from Heston was reported last week, arrived in Cairo on Saturday, July 1, after a comfortable five days' trip. They are both fitted with navigation lights, and played an important part in the night-flying demonstrations organised by Sir Quintin Brand, Director-General of Aviation in the Middle East, to celebrate the installation of modern night-flying equipment at Almaza aerodrome. This equipment

includes a Chance-Airwork shadow-bar floodlight, similar to that which has been in successful operation at Heston for over a year.

The Secretary of State for Air, Lord Londonderry, greatly enjoyed a trip to Cowes and back again on Sunday, with Lady Londonderry and his daughter. They travelled by Spartan Air Lines, whose six-seater Spartan "Cruisers" run daily services between Heston and the Isle of Wight.

Lord Londonderry has been a satisfied partaker of Heston's salads and snacks at the new restaurant bar. Another frequent visitor who prefers to eat a cold lunch from a high stool and watch the evolutions on the aerodrome through the mirror behind the bottles is Mrs. Calthrop, who was responsible for the scenery, lighting and costumes of "Cavalcade." This talented lady has refused several enticing and remunerative jobs so that she may give her full time to a course of flying at Heston. For this she wears an excellently-designed trouser suit, a garment which we commend for regular summer flying to the majority of lady pilots whose thin silk dresses are whipped almost to tatters in the slipstream as they tidy up the luggage locker and settle the cushions in the cockpit.

In the heat of Friday afternoon we watched our blind-flying instructor, Mr. Brian Davy, gyrating on a mechanical exerciser in an attempt to recapture the sensations of a spin. To make it go slow enough was evidently the difficulty, and to remain upside-down or in any position for more than a split second. It looked much more like shooting Niagara in a barrel, and was great fun for the spectators, a few of whom were brave enough to try it.

The school "Cadets" are going stronger than ever, and the three of them put in 65 hr. in three days.

THE AIR LEAGUE OF THE BRITISH EMPIRE

SPEAKING at the Annual General Meeting of the Air League of the British Empire, held on July 5, the Duke of Sutherland, the Air League's President, said:—

"The Report covers a critical year for British aviation. Proposals for the abolition of bombing by pact (except for police purposes in outlying places), the strict limitation of air armaments by numbers and size of aircraft, the abolition of military and naval air forces as a later step, and the possibility of the international control or internationalisation of civil aviation, were brought before the Disarmament Conference at Geneva. The Air League, being a national, patriotic body, would have given its whole-hearted support to all of these proposals had it been convinced that they were reasonable measures to take in the cause of disarmament. The Air League, however, regarded some of them with grave concern and considered that they prejudiced our safety while contributing nothing to the progress of disarmament.

In the country's interests, therefore, the Air League sought every available means for presenting its point of view to the public, the chief medium being the columns of the Press. In its letters and articles to the newspapers and periodicals, the Air League indicated the risks that would be incurred if the disarmament proposals, as framed, were adopted as a whole. It supported the more reasonable course of limiting air armaments and recommended the regulation of the use of aircraft by codified international law. It could see no security in the proposal to abolish bombing by pact; indeed, by adopting the proposal this country would be deprived of a powerful weapon of attack against submarines in the event of another war, and its defensive measures must inevitably be weakened. Further, the abolition of military and naval aviation could be carried out only by the application of a form of control over civil aviation that would destroy a great and growing British export trade, kill initiative and enterprise, render negative British technical and operational skill, and cause the rapidly-expanding industry of air commerce to stagnate. Finally, we should have to rely on international goodwill for our security and prosperity—a thing quite unacceptable when alternative measures are available.

"The Air League's letters to the Press revealed the fact that there are hundreds of thousands of people in this country who honestly and sincerely believe that the abolition of the world's military and naval aviation is both practicable and would be in the interests of humanity—if not civilisation. Many powerful organisations that support this view have sought ways and means of urging the Government to withdraw its right to undertake bombing in outlying places which, they claim, is obstructing the progress of air disarmament. This proves, first, that there is an urgent need for public education on air matters, and, secondly, that human nature does not change very much.

"If we recall that the second Lateran Council, in the year 1139 A.D., outlawed the cross-bow as a barbarous instrument of warfare; that gunpowder was denounced as the invention of the devil; that breach-loading rifles were condemned on the grounds that they turned infantry into long-range assassins, one will perhaps come to the conclusion that to-day's discrimination against aircraft is only natural. But it is not enough to accept the inevit-

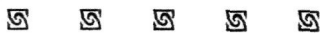
able with complacency, sure in your own minds that a wise counsel will prevail. Experiments in idealism have been made and history records the consequences. In dealing with the complex problem of air disarmament, the Air League asks for realism and moderation—as exemplified by its plea for limitation to a one-power standard set as low as can be agreed upon, followed by reductions as justified by the growth of international friendship. At the same time, an international code for the conduct of war in and from the air must be drawn up. At the present time, no such code exists—a curious and little-known anomaly in a somewhat over-regulated world.

"This policy," concluded His Grace, "has its critics, but I would ask those who criticise to answer this question. Would they support proposals for the abolition of the Royal Navy and the internationalisation of all marine craft, thereby relying on international goodwill for their security and prosperity? I think you will all agree with me that air power and air transport have now become analogous to sea power and sea transport, and the question is therefore pertinent.

"I have dwelt at some length on the subject of air disarmament because that has become the most urgent question of the day. We do not, however, neglect anything that can foster civil aviation. We have supported to the best of our ability the touring Air Pageants which bring aviation before the whole countryside; we have brought our influence to bear on the establishment of more aerodromes; we have tried to educate the few forgetful ones among the younger generation of aviators to the annoyance which may be caused by low flying, and we have in the forefront of our policy the desirability of greater freedom of international air travel and the need for faster air mail services, enjoying more encouragement from a friendly Postmaster-General."

In seconding the President's proposal that the Annual Report for 1932-33 should be adopted, Lord Mottistone said that he could add very little to what the chairman had said. During the past few months the necessity for a body such as the Air League to proclaim the truth about air matters, had been made apparent. He was particularly concerned to protest against the contention that air force was an inhumane and brutal thing as compared with the kindly forces employed on land and sea. This was the reverse of the truth, for air power had saved thousands of lives which would otherwise have been sacrificed, and millions of pounds that would otherwise have been expended in the application of other forms of force.

Instead of trying uncertain and dangerous experiments, the world should try to get international agreement for the conduct of war from and in the air. Short-sighted people would contend that these agreements were of no value, but, in fact, their moral value was immense. One of the fatal errors of our late enemies was to disregard international agreements in the employment of poison gas and in their unrestricted submarine campaign. In so defying civilised opinion they brought the U.S.A. and other countries into the war against them. The adoption of such international agreements was a far wiser course than attempts to abolish military aircraft and to place civil aviation under international control. He honestly believed that the conquest of the air by man was a great civilising power, capable of bringing great benefits to mankind. It might even be that, properly and wisely regulated, it would make war less inhumane and less cruel.



The G.A.P.A.N.

THE Guild of Air Pilots and Air Navigators has complete sets of books embracing all necessary reference and information for study in connection with the Second-Class Navigator's Licence. These sets are at the disposal of pilots during the summer months at a reduced fee of 2s. 6d. a week per set of 14 books. A deposit of £2 10s. is payable and will be refunded on return of the books in good condition. Those wishing to avail themselves of this facility should write to the Clerk, Guild of Air Pilots and Air Navigators of the British Empire, 61, Cheapside, E.C.2. The Guild has at the present time particulars of several vacancies for commercial pilots at moderate salaries, which it is unable to fill. Would members and associates who are interested please apply at once for particulars?

Air Scouts' Pageant

It has been proposed to hold an air pageant, in the Stockton-on-Tees district, in aid of the Air Scout Move-

ment. The date as yet has not been fixed, but the two most favourable dates are September 2 and 9, and it is more than possible that it will be one of these days. The organisers would welcome any help in making a success of this pageant, and all those willing to assist in any way, such as aerobatic feats, visitors, or in passenger carrying, free or on a percentage basis, should write to the Secretary, Air Scouts' Association, 143, Stokesley Crescent, Billingham-on-Tees, Co. Durham. It may be added that all visiting pilots would be made welcome.

The Douglas Works Re-open

THE DOUGLAS WORKS, Kingswood, Bristol, home of the "Douglas" motor cycle engine, which recently changed hands and closed down, has been purchased, it is understood, by William Douglas & Co., which existed prior to the formation of Douglas Motors (1932), Ltd. This firm hopes to extend its activities to engines for light aeroplanes.

LUXOR GOGGLES



Model No. 10. Price 50/-

All Airmen must have perfect Vision. That is why Luxor Goggles were favoured by most of the King's Cup Pilots.

Look for the name "Luxor" on the new Red rubber cushions.

Designed and Manufactured exclusively by

E. B. Meyrowitz

LIMITED

1a, Old Bond Street, 157, Regent Street,
London, W.1.

PITMAN'S BOOKS

RAFTALES

By CHARLES B. BAKER. Illustrated by Ping.

A collection of legends and stories in verse for Flight Cadets and all who are interested in R.A.F. activities in the East. The author's wit and sparkling lyrics are irresistible and will amuse everyone with an appreciation of humorous verse. 68 pp. 2/- net.

AN INTRODUCTION TO AERONAUTICAL ENGINEERING

Especially recommended for ground engineers, this Series of introductory textbooks deals fully with the theory underlying modern practice in aeronautical engineering. Together, these volumes form a complete course of instruction for everyone concerned with aeronautics.

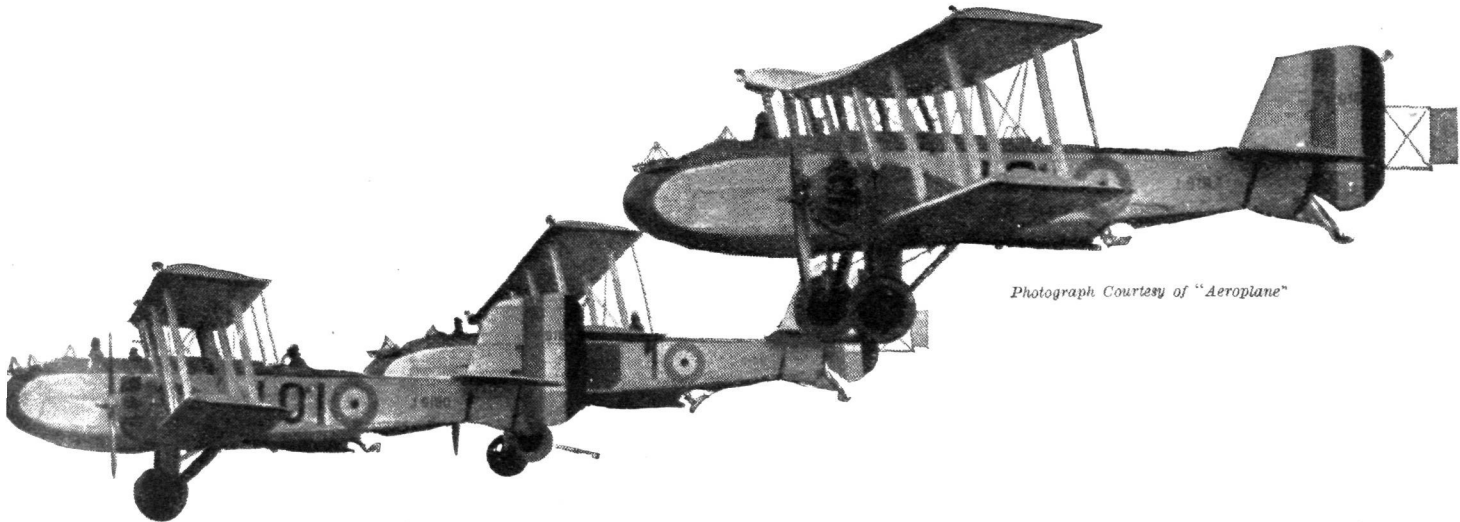
VOLUME I. MECHANICS OF FLIGHT. By A. C. KERMODE, A.F.R.Ae.S. 222 pp. 8/6 net.

VOLUME II. STRUCTURES. By J. D. HADDON, B.Sc., A.F.R.Ae.S. 136 pp. 6/- net.

VOLUME III. PROPERTIES AND STRENGTH OF MATERIALS. By J. D. HADDON, B.Sc., A.F.R.Ae.S. 188 pp. 8/6 net. (Ready immediately.)

New Complete List of Pitman's Books on Aviation, post free on request.

SIR ISAAC PITMAN & SONS, LTD.,
PARKER STREET, KINGSWAY, W.C.2.



Photograph Courtesy of "Aeroplane"

Twin-engined Boulton & Paul Sidestrands
as supplied to the Royal Air Force

Designers and Constructors
of High Performance Service
and Civil Aircraft

BOULTON & PAUL LTD
NORWICH
London Office : 139 Queen Victoria Street, E.C.4

KING'S CUP AIR RACE, 1933

HERMES II RELIABILITY

THE DESOUTTER
machine and its
HERMES
engine

flown by
CAPT. E. D. AYRE
had previously been used
FOR THREE YEARS
by National Flying Services
Ltd., for Taxi-work and

FINISHED FOURTH

only a matter of
seconds behind the
winning machine.

Capt. Ayre states:—

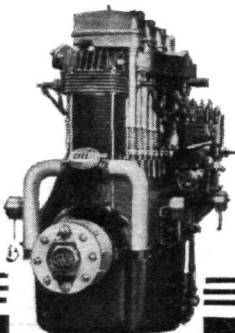
The Hermes Engine ran faultlessly
throughout the whole day at full
throttle.

**FOR CONTINUOUS RE-
LIABILITY FIT HERMES
ENGINES.**

**CIRRUS HERMES ENGINEERING
CO., LTD., CROYDON.**

'Phone:
Croydon 2410-1.

Cables:
"Ocirruso, Croydon."



R.F.D. COMPANY.
Manufacturers of
FLOTATION GEAR
PILOT HARNESS
PNEUMATIC TENTS
ROPE, WIRE, CANVAS AND
FABRIC WORK

Suppliers to the
R.A.F. of
KITE BALLOONS
AND PNEUMATIC DINGHYS

R.F.D. COMPANY
17, STOKE ROAD, GUILDFORD : SURREY.
Phone: GUILDFORD 1289.

SWIM... Large new pool. Perfect dressing
accommodation; water warmed 75
deg.; constant filtration. Floodlit.
OPEN DAY AND NIGHT.

FLY Private Landing Ground. (No land-
ing fee for visitors.) Demonstration
flights.

DANCE .. In Club to PERCY CHANDLER'S
BAND, till 3 a.m. (Sats. 4 a.m.)

DINE First-class Restaurant service,
available ALL NIGHT.

at the
ACE OF SPADES
KINGSTON BY-PASS. (Elmbridge 1033-4.)

AT LAST SOLO
£1 per hour on Moths!

inclusive at Contract Rate (50 hours). The
cheapest flying in the world. Only 15 miles
from the centre of London.

DUAL £2. Ordinary Solo only £1 5s. 0d. per hour
inclusive. Monthly membership £1 1s. 0d.
Residential accommodation in the Clubhouse at
reasonable terms.

Full particulars from:—
The Herts and Essex Aero Club,
Broxbourne Aerodrome, Nazeing, Essex.
Tel.: Hoddesdon 453.

Kindly mention "Flight" when corresponding with advertisers.

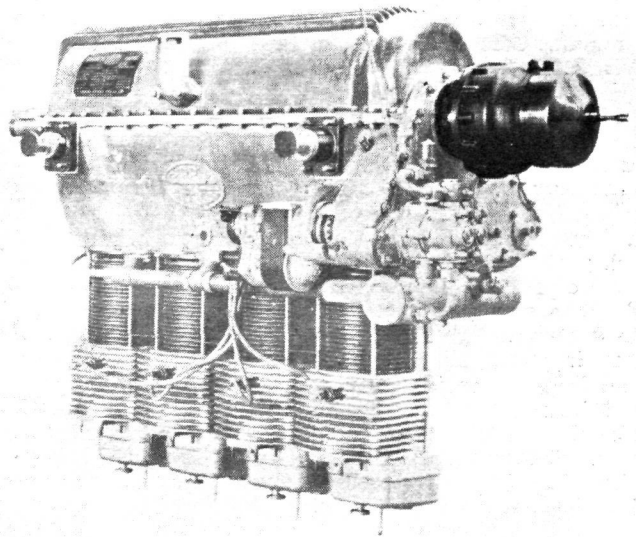
The Industry

THE CAPEL STARTER

SOME form of mechanical starter has long been wanted for our light aircraft engines. Now the Cirrus-Hermes Engineering Co. have placed upon the market the Capel Starter, which fulfils all the requirements. This was first introduced to the world by our description in FLIGHT for March 9 of this year. At that time, however, it was somewhat experimental, and the electrical model had not been fully tested out. Now the Capel Starter is on the market and is already fitted to aircraft in everyday use. It will be seen from the photographs that the Capel Electric Inertia Starter, to give it its full name, is very compact, and this is, moreover, borne out by the following data:—

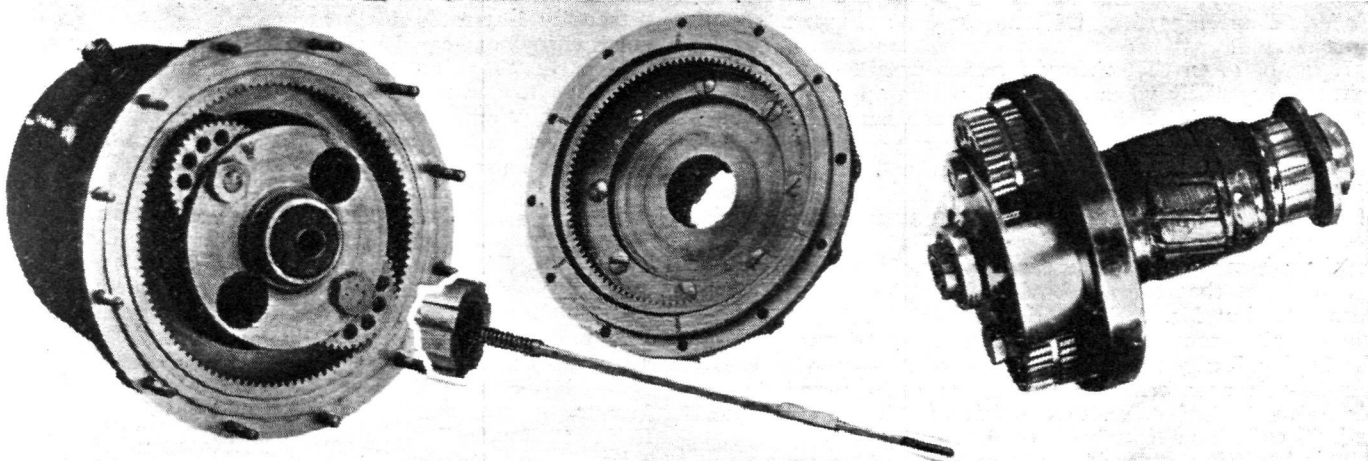
	Electric.	Hand-operated.
Weight	17½ lb.	10 lb.
Maximum diameter ..	6½ in.	6½ in.
Maximum overall length	8½ in.	5½ in.
Current consumption, 15 amps at 12 volts.		

An advantage of this type of starter is that it does not in any way interfere with the normal functioning of the engine, and, should it for any reason be out of action, the engine may be started up in the usual way. With this low current consumption the ordinary navigation light battery can be used for starting, and one of 21 amp hr. capacity will provide approximately 100 starts from cold, for a "Hermes" engine. Proof of this lies in the fact that 54 starts from dead cold have been obtained on a 15 amp. hr. battery. The time taken to energise the flywheel sufficiently for a start from cold is only 25 sec., but when the engine is hot less than a quarter of this time is needed.



The Capel Starter on a "Hermes IV" engine. It fits in well with the design of the crankcase.

In its present form the starter is suitable for engines of up to 200 h.p., but with very slight alteration in the size and weight of the flywheel it can be used for engines of up to 600 h.p.



The Capel Starter in pieces showing its comparative simplicity.

ASSISTANCE TO TRAVELLERS ABROAD

MOTORISTS—and for that matter, aviators—travelling abroad who have little or no knowledge of foreign languages have often had a vast amount of trouble with hotel and garage bills. Autocheques, Ltd., of Piccadilly House, 33, Regent Street, have arranged with hundreds of Continental hotels a system of cheques which should be of great assistance to travellers abroad. One of these cheques entitles the presenter to dinner, bedroom, breakfast, garage and gratuities at any specified hotel for one night, and this method saves all the trouble of unpleasant haggling. Autocheques have arranged for the acceptance of these cheques at hotels in most countries in Europe.

SIMMONDS AEROCESSORIES, LTD.

SIMMONDS AEROCESSORIES, LTD., of 55, Turnmill Street, E.C.1, announce that they have granted an exclusive licence for the aeronautical uses of the Simmonds-Corsey Control, described in a recent issue of FLIGHT, in the United States of America to the Brewster Aero-

nautical Corporation, Long Island City, New York. Production is already in hand. The control will be known in America as the "Simmonds-Brewster Control." Simmonds Aeroaccessories, Ltd., have also recently appointed the following agents:—

For Holland—Messrs. Vereenigde Ingenieurs en Handelsbureaux, Heerengracht 401-3, Amsterdam.

For Sweden—Messrs. Aero Materiel A.-B. Birger Jarlsgatam 6, Stockholm.

Something quite new in aeronautical development is to be found in this company's "24-hr. template" service. The aircraft manufacturer has merely to bend a series of lengths of mild-steel rod to the desired run of the control, marking each length in sequence with designatory letters. The only technical information then required is the stroke of the unit, and the desired diameter of casing tube. These templates are then despatched to New Street or Snow Hill stations, Birmingham, where they are collected by Simmonds Aeroaccessories, Ltd. The casing tubes are then bent to shape, threaded left and right at the two ends to take

hexagon jointing ferrules and finally the internal linkage is made up in one length. The controls can be despatched within about 24 hr. of receiving the templates, and all that the aircraft manufacturer has to do is to insert the various lengths of casing tube in position, join them up by means of the ferrules, clip the casing tube in position, insert the linkage and the control is ready to do its work. The drawing office is thus completely relieved of much detailed work and the time for installation is negligible. A special control for Mr. and Mrs. Mollison's "Dragon" *The Seafarer* was promptly completed in this manner. Twenty-three aircraft manufacturers are now regularly using the Simmonds-Corsey system in over 50 different types of aircraft.

AERODROME BEACONS

SODIUM lamps have already proved their use on roads and are now being taken up by aerodrome authorities. On the Waalhaven Aerodrome at Rotterdam an air beacon, containing Philips' "Philora" sodium lamps, has been installed. At Amsterdam Aerodrome also these lamps have been installed on the aerial tower at a height of 50 yd. each; this latter beacon has a luminous intensity of 2,000 c.p. The lamps are supplied with A.C. and burn at the normal voltage. Pilots have reported that they can see these lights 40 miles distant. The Philip Sodium lamp is not a filament lamp, but a gas discharge lamp. The light differs in many ways from the ordinary bulbs used hitherto in that the radiation yielded is practically monochromatic, whilst there is also a noted absence of glare. Sodium lamps, throwing out a beam which is nearly yellow in colour, practically conquer fog, and are therefore ideal for use on aerodromes.



Book Reviews

"*The Aeronautical and Miscellaneous Notebook of Sir George Cayley.*" Edited by J. E. Hodgson (E. W. Heffer, Cambridge). Obtainable from FLIGHT Office. Price 7s. 6d.

It is not often that theory foreruns practice by a whole century, especially when connected with things mechanical. It must be admitted, however, that such has been the case with aviation, though probably few people realise it. Sir George Cayley, who has justly been called the "Father of Aeronautics," first studied, and worked out, the theory of flying at the beginning of the last century, and modern developments have proved these theories to be correct by putting them into practice successfully. Until recently it was thought that the notebooks of Sir George Cayley had been lost, but Mr. J. E. Hodgson, the Hon. Librarian of the Royal Aeronautical Society, obtained permission from the Cayley family to make a search, and the notebook was found—this now being published, with the permission of Sir Kenneth Cayley, under the title of "*The Aeronautical and Miscellaneous Notebook of Sir George Cayley.*"

This book is very well worth reading. At a time when all sorts of fantastic, almost incredible, theories concerning flying were floating about various European countries, Sir George Cayley, in his Yorkshire home, had perceived the truth.

Apart from clear analyses of the flight of birds, which must have been the result of many hours of careful study and observation, this book contains a number of sketches illustrating methods of wing constructing, which help to prove that his theories of aerodynamics anticipated those of a much later date. The method of handling his subject by Mr. Hodgson leaves nothing to be desired.

"*Scale Model Aircraft,*" by James H. Stevens (John Hamilton, Ltd.). Obtainable from FLIGHT Office. Price 5s. 6d., post free.

Judging from the large number of inquiries we receive requesting particulars and details of various types of aircraft for the purpose of constructing scale models (apart from flying models), there is no doubt that this is a very popular—and increasingly so—hobby. There are many reasons for this; there is your aviation enthusiast who is keenly interested in all aeroplanes, and, in addition to collecting photographs and cuttings of various types, is anxious also to possess exact scale models of favourite

INSTRUMENTS

THOSE who interest themselves in the fitting of instruments to aircraft would do well to study those manufactured by Morell. They are ball-bearing, using a special design of ball race, making them very free running and assuring long life with little attention. The tachometers, so the makers claim, are provided with such an efficient inertia damping mechanism, that they are dead-beat, yet cause no friction, and may be driven in any direction of rotation. Their long-distance tachometer is a small plant generating an alternating current, thus eliminating the use of a commutator and brushes, which up to the present have been the main source of defects. The generator is simple, dustproof and foolproof, its net weight being 1½ lb., and that of the indicator 2 lb. The Morell anemometer is a combination of the Robinson Cup Cross and centrifugal tachometer. On the extension of the pendulum shaft the cup cross is located. When exposed to an air current the cup cross receives a very definite average angle velocity in such a manner that the average absolute speed of the cup centre is in approximately constant relation to the wind velocity. Morell instruments were used by Costes and Bellonte in their non-stop flight between Paris and New York.

GOGGLES

MESSRS. E. B. MEYROWITZ have made a change in the cushions of their goggles, which in future will be red instead of white and of home manufacture. All Luxor Goggles will in future be fitted with these red rubber cushions embossed with the word "Luxor."

types. Then there is the person who desires to possess models of some particular type or types in which he is personally interested for some reason or the other, while much enjoyment can be obtained with a collection of scale models by "making up" a layout of an airport complete with hangars, clubhouse, trees, etc., or arranging formations, evolutions, aerial combats, etc., against a suitable background and photographing the result—which can sometimes be most realistic.

Not the least fascinating side of collecting non-flying scale models of aeroplanes is their construction, and this, once you know how, is not a particularly difficult job. "*Scale Model Aircraft,*" by James H. Stevens, is an excellent book which tells you how to make these models and all about them. It is profusely illustrated, not only with constructional details, but with complete views and scale drawings of several well-known types of aircraft. These latter include the following: Hawker "Hart"; Armstrong Whitworth A.W. XVI; Bristol "Bulldog"; D.H. "Dragon"; Bristol Fighter; S.E.5; Sopwith "Pup" and "Snipe"; Spad S.VII; "Albatros D.V."; Roland D.11, and Hannoveraner. An example of a model aerodrome is also given. Anyone, expert or otherwise, who wishes to construct scale model aeroplanes will find this book extremely helpful.

"*The 'Autogiro' and How to Fly It,*" by Reginald Brie (Sir Isaac Pitman). Obtainable from FLIGHT Office. 5s. 6d., post free.

This book of 82 pages contains much instructive and interesting matter connected with the "Autogiro." The author is probably one of the most experienced "Autogiro" pilots we have. He answers a series of carefully chosen questions in a lucid manner, interpolating them with many useful diagrams and photographs. No wild claims are made, and it is not concealed that "Autogiroing" or "Giropiloting" or whatever the technical word should be, is not the same as more orthodox flying. The book is not an advertisement and avoids "puff" with admirable reserve. It comprises what is virtually a lay course for the pilot or owner and also includes maintenance and adjustment notes. A very short summary of the theory of the "Autogiro" is given as lucidly as the subject allows. Altogether it is a most useful and instructive book.

THE ROYAL AIR FORCE

London Gazette, July 4, 1933.

General Duties Branch

The following Pilot Officers are promoted to rank of Flying Officer:—
J. Grandy (June 11), A. M. Doran, R. H. E. Emson, A. R. Glencross (June 19).

Wing Com. H. S. Powell, M.C., is transferred from half-pay list, Scale B, to half-pay list, Scale A (July 1); Sqdn. Ldr. J. F. Gordon, D.F.C., is placed on half-pay list, Scale A (June 25); Flt. Lt. F. G. Cator is placed on half-pay list, Scale B, from July 4 to July 17, inclusive; Air Commodore A. D. Warrington-Morris, C.M.G., O.B.E., is placed on retired list at his own request (July 3). The following Flying Officers are transferred to Reserve Class A (June 29):—J. R. Ayling, R. L. Bennett, A. K. H. Binley, J. H. Brown, R. C. W. Ellison, J. M. Israel, G. W. J. Jarrett, H. E. Sales, W. G. Stevenson.

Lt.-Cdr. E. M. C. Abel-Smith, R.N., Sqdn. Ldr. R.A.F., ceases to be attached to R.A.F. on return to Naval duty (June 9); the short service commn. of Pilot Officer on probation R. L. Crossman is terminated on cessation of duty (July 5).

Medical Branch

Flying Officer O. M. Fraser, M.B., Ch.B., is promoted to rank of Flt. Lt. (June 30).

MEMORANDUM.

The permission granted to Sec. Lt. H. Plackett to retain his rank is withdrawn on his conviction by the Civil Power (May 1).

ROYAL AIR FORCE RESERVE. RESERVE OF AIR FORCE OFFICERS.

General Duties Branch

A. H. Grace is granted a commn. as Flying Officer in Class A (June 22); Flight Lt. C. V. Lock is transferred from Class A to Class B (June 19). The following Flying Officers are transferred from Class A to Class C:—S. L. F. St. Barbe (Dec. 15, 1932); A. D. Page, M.M. (June 10).

Flying Officer L. P. Hirsh is transferred from Class B to Class C (April 1). The following Flying Officers relinquish their commns. on completion of service (June 30):—A. L. Ottway, W. F. Parkinson. Flying Officer F. J. Brunton relinquishes his commn. on completion of service and is permitted to retain his rank (June 30).

AUXILIARY AIR FORCE

Medical Branch

No. 607 (COUNTY OF DURHAM) (BOMBER) SQDN.—D. A. Smith, M.B., Ch.B., is granted a commn. as Flying Officer (June 2).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Squadron Leader L. J. Chandler, M.B.E., to H.Q., Iraq Command, Hinaidi, 17.5.33, for Signals duties.

Flight Lieutenants: J. B. Fyfe to No. 28 (A.C.) Sqdn., Ambala, India, 1.6.33. W. A. Thompson, to No. 84 (B) Sqdn., Shaibah, Iraq, 17.5.33. R. R. Greenlaw, M.B.E., to No. 4 Flying Training School, Abu Sueir, Egypt, 23.6.33. J. E. G-H. Thomas, to R.A.F. Base, Calshot, 3.7.33. D. F. W. Atcherley, to No. 20 (A.C.) Sqdn., Peshawar, India, 29.5.33.

Flying Officers: The following Flying Officers are posted to R.A.F. Base, Calshot, on 3.7.33. G. Atkinson, R. J. Bennett, M. D. C. Biggie, G. F. Humphries, C. C. McMullen, and G. F. Overbury. W. R. Sadler, to R.A.F. Training Base, Leuchars, 11.6.33. E. H. Coleman, to No. 99 (B) Sqdn., Upper Heyford, 30.6.33.

Pilot Officer E. C. Kidd, A.F.M., to R.A.F. Base, Calshot, 3.7.33.

Acting Pilot Officers: The following Acting Pilot Officers are posted to No. 4 Flying Training School, Abu Sueir, Egypt, on 23.6.33, for flying training:—D. D. Atkinson, D. F. Balsdon, N. de W. Boulton, A. E. Eady, P. H. Gibbings, R. R. Gregory, A. P. Hollick, G. H. Jenkinson, P. E. Meagher, S. J. McN. Newman, F. C. Richardson, W. A. Theed, and E. M. Withy.

Stores Branch

Flight Lieutenants: C. T. Davis, to No. 1 (Indian Wing) Station, Kohat, 28.5.33. C. W. H. Moller, to Aircraft Depot, India, Karachi, 8.6.33.

Flying Officer B. S. Cartmel, to No. 4 (A.C.) Sqdn., S. Farnborough, 1.7.33.

Accountant Branch

Flight Lieutenant A. W. Gray, to Station H.Q., Hornchurch, 27.6.33.
Flying Officer F. W. Judge, to Station H.Q., Upper Heyford, 4.7.33.

THE ROYAL AIR FORCE MEMORIAL FUND

The third Council Meeting of the year was held at the offices of the Fund, No. 7, Idlesleigh House, Caxton Street, London, S.W.1, on July 5. Sir Charles McLeod, Bart., Chairman and Honorary Treasurer, was in the Chair. The usual financial resolutions were carried. The meeting was informed that grants to the amount of £2,690 14s. 5d. had been disbursed since the last meeting on May 3, 1933.

Resignations.—The Council regretfully accepted the resignation of Air Chief Marshal Sir E. L. Ellington on his appointment as Chief of the Air Staff; but, in accordance with the rules of the Constitution of the Council of the Fund, Air Vice-Marshal F. W. Bowhill, C.M.G., Air Member for Personnel, will take his place on the Council.

Other Funds.—The Meeting was informed that Mrs. L. M. K. Pratt Barlow, O.B.E., represented the Fund at the annual meeting of the Soldiers' and Sailors' Help Society, at Caxton Hall, on June 22; and that Mrs. F. Vesey Holt attended the annual meeting of the Soldiers', Sailors' and Airmen's Families' Association, at the Basil Street Hotel, on June 28.

The next Meeting was fixed for Wednesday, October 4, 1933, at the offices of the Fund at 3 p.m.

Air Navigators' Examination

The Air Ministry announces the following candidates, whose names are given in alphabetical order, have passed the examination for Civil Air Navigators' Licences, held in London and Baghdad on March 27, 28, 29 and 30, 1933:—

London Centre.—First Class.—Flt. Lt. E. V. Major. **Second Class** Flt.-Lt. P. Bailhache, D. V. Carnegie, E. R. Davis, Flt.-Lt. C. E. Eckersley-Maslin, C. E. Gardner, F. W. Hancock, H. A. Marsh, F/O. W. F. Murray, J. H. Perry, R. V. Price, N. T. Tangye, J. B. Veal, F/O. D. J. Waghorn, F/O. R. C. Warner.

The subjects of the second class examination were:—International Legislation. Form of the Earth Maps and Charts. Meteorology. Dead Reckoning and Direction Finding W/T Navigation. Magnetism and Compasses. Visual Signalling—Morse Flashing—Semaphore and International Procedure.

For the first class examination a higher standard and wider knowledge of the above subjects was required with the addition of:—Tides—Theory and Prediction. Astronomical Air Navigation.

Thirty-three candidates sat in London for the second class examination and two for the first class examination, while three sat at Baghdad for the second class examination.

The next examination will be held in October. The precise dates will be announced later.

Nomenclature of Aircraft—Singapore III

The official name for the production type of Singapore boat seaplane is "Singapore III." This name is to be used in all correspondence and reports relating to this type of seaplane.

Cranwell

The "passing out" inspections of the Royal Air Force College and aircraft apprentices will be held on Friday, 14th July and Wednesday, 26th July, respectively. Except in cases of emergency, no aircraft from any other station is to fly within two miles of Cranwell or to land at Cranwell aerodrome on these dates.

Promotion to Group Captain

It is announced that the upper limit of the zone of promotion to group captain in the general duties branch will be reduced to six years' seniority as wing commander, with effect from the promotions to be made on 1st July, 1934. Wing commanders of 1927, and January, 1928, seniorities will therefore be finally considered for promotion on 1st January, 1934.

Dinner to Houston Everest Flight

A LUNCHEON was given to the members of the Houston Everest Flight by the British Empire Union, at the May Fair Hotel on Tuesday, July 4. Lord Danesfort, the President of the British Empire Union, who was in the chair, said that the members of the flight had proved that the spirit of adventure was not dead in the British race. They had not only shown the highest qualities of courage, skill and enterprise, but they had also raised the name and the fame of the British race throughout the world. Mr. Frank Souter, Chairman of the Union, said that the reason Lady Houston financed the expedition was to prove to the people of India that British enterprise, valour and pluck were as strong as ever. Col. L. V. Stewart Blacker told the story of an elderly woman who wrote asking for a piece of the ark to be brought back to her from the mountain top. The flying machine, he maintained, with its ability to cement goodwill, would be the means of

restoring good feeling between the peoples of India and the British Crown.

Hastings Airport

THE CORPORATION OF HASTINGS have decided to borrow £10,000 for the purpose of buying the Pebsham estate for development as an airport. The total area of the site is 381 acres. Work will start at once, and a landing ground fit for light aeroplanes will be ready by the autumn. It is hoped also to form a local club. The airport will be important, for it will be on the direct route from Croydon to the Continent.

Aerodrome for Cork

THE recommendation of the City Manager that an agreement be entered into with the Office of Public Works for renting lands at Ballincollig as a municipal aerodrome has been approved by the Cork Corporation. An air service between Galway and Dublin will be started at once.

HANDLEY PAGE, LTD.

THE ordinary general meeting of Handley Page, Ltd., was held on Monday, July 3, at Winchester House, Old Broad Street, London, E.C.

Mr. S. R. Worley, F.C.A. (the Chairman), in moving the adoption of the report and accounts, said that during the year the company had been restricted, and not until the autumn was one of the new types selected by the R.A.F. They still produced under competitive conditions which entailed great expenditure, often at a loss. This difficulty would be always with them as long as the Government's policy remained unchanged. The eight large machines built for Imperial Airways had proved successful. The profit for the year amounted to £8,134, and, although their manufacturing operations did not warrant the declaration of a dividend, yet in view of the fact that they had £20,330 to the credit of profit and loss account, and taking into account the considerable reserves, the directors felt they could recommend a dividend of 10 per cent. on the preference shares.

Mr. F. Handley Page, C.B.E. (Managing Director), in seconding the motion, said that their 40-seater machines on Imperial Airways' routes had fully justified the high hopes which were raised when they went into service, and last year, when the full benefit was obtained from the new aircraft, the number of passengers increased to 36,308, compared with 18,302 in 1931. On July 9 of last year one of these aircraft carried 427 passengers in one day and performed six separate flights between London and Paris, and two separate flights between London and Basle. With the latest type of aircraft it was a perfectly feasible commercial proposition to run services similar to the London-Paris without Government subsidy or aid. On the military side the company had been fortunate in that the "Heyford" had been selected to replace the "Hinairi." The developments of slotted wings continued. In the International Air Tour Contest last year the winning machine and 18 out of the first 19 were fitted with slotted wings. Mr. Handley Page finished up by saying that the great need of civil aviation was that there should be a perfect freedom of the air with restrictions reduced to a minimum, and it should be allowed freely to develop along the commercial lines due to economic considerations. Then civil aircraft would become more and more differentiated from their military prototypes and eventually serve the purpose of civil flying alone.

✻ ✻ ✻ ✻

The Bristol Review

THE sixth issue of the *Bristol Review* has just been published. It is well up to the high standard which the publishers have, in previous issues, set for themselves, and contains much that is of considerable interest. This issue confines its attentions to engines, and shows clearly the variety of machines powered by the Bristol Co.; in fact, there are few types of machines, especially in the Service of our own country and others, which do not possess representatives advertising the efficiency and reliability of Bristol engines. The issue also contains an interesting and highly-instructive article on Low Drag Cowlings, and the various experiments that have resulted in the present methods counteracting engine drag; a description of how "Bristol" craftsmen are trained, and an article describing the methods of inspection of engines during manufacture. The Bristol Co. inspection staff consists of about 170 inspectors distributed throughout every department. This staff is divided into five sections dealing respectively with components, sub-assemblies, engine assembly, engine testing and the main view department. The component inspection group comprises 24 viewing stations in the various machine sections. Among the illustrations are two of special interest, one of a "Bristol" experimental machine with totally-enclosed "Jupiter" engine installation, tested in 1922, the other an excellent view of Alexandria Harbour, with four flying-boats, three "Scipio" class and one "Calcutta" class, at anchor. All these machines, of course, are equipped with "Bristol" engines.

The Society of Model Aeronautical Engineers

THE most important model aeroplane competition of the year, the Wakefield International Cup, was flown at Fairey's Great West Aerodrome on July 2. It was unfortunate that only one other country, America, formed the opposition, and then with only one machine. This was

sent by Gordon S. Light, of Lebanon, Penn., and his model was flown for him by that old fighter, J. E. Pelly-Fry. The English team consisted of J. W. Kenworthy, J. Pearce and C. S. Rushbrooke, of the Manchester Model Aircraft Society, H. W. Bexley (the Model Aircraft Club), R. N. Bullock and A. M. Willis (S.M.A.E.). The competition started with the qualifying test for directional stability, each model having to cover a course of 200 yards without circling. At six o'clock the wind had fallen a little, and the duration flying commenced. It was real quality flying. Although individual flying on other days and at other places may have equalled it, it is certain that in this country no seven machines have been so consistently good. The winner of the cup, J. W. Kenworthy, broke the British R.O.G. record with a flight of 5 min. 21 sec. (out of sight). Second came Tony Willis with 2 min. 23.5 sec., and the American entry, Gordon Light, close on his heels with 2 min. 23.2 sec. The fourth, fifth and sixth men were R. N. Bullock (2 min. 16.5 sec.), H. W. Bexley (2 min. 14.4 sec.), and J. Pearce (1 min. 18.1 sec.). All of these were fine flights. C. S. Rushbrooke, who failed to get through the qualifying test, made many good flights; one was unofficially timed at 1 min. 19 sec. It will be seen that five competitors made flights of over 2 min. Mr. Kenworthy's winning model weighs 2.8 oz., has a span and mean chord of 48½ in. × 4.2 in. and a 14-in. propeller driven by a single-skein motor weighing ¾ oz. The American model weighs 1¼ oz.; span and chord, 36 in. × 5 in. The most notable feature of this machine is the propeller, which is 17 in. dia. with blades 2½ in. wide. The main business of the day being over, Capt. Bowden quietly brought out his petrol-driven model "Bee," and put up a hand-launched flight of 3 min. 55.4 sec., and so established another record. This machine has recently been described in the "Model Engineer."

So finished a fine day's flying, and thanks are due to Mr. C. R. Fairey for putting this fine aerodrome at the disposal of the S.M.A.E. The following record flights have been set up since April 4:—April 29, Fuselage Farman, type H.L. (C. A. Rippon), 31.2 sec.; May 20, petrol-driven model H.L. (C. E. Bowden), 3 min. 30 sec.; May 21, "Pterodactyl" type H.L. (F. B. Baggs), 90 sec.; July 2, fuselage tractor R.O.G. (J. W. Kenworthy), 5 min. 21 sec.; July 2, petrol-driven model H.L. (C. E. Bowden), 3 min. 55.4 sec.

PUBLICATIONS RECEIVED

Nine Lives. By John Tranum. London: John Hamilton, Ltd. Price 8s. 6d. net.

The Aeronautical Ground Engineer's "A" and "B" Licences. By Capt. S. L. Collins, A.M.I.A.E. A Complete Course for the Aeronautical Ground Engineer. Vol. I. London: John Hamilton, Ltd. Price 7s. 6d. net.

Scale Model Aircraft. By James H. Stevens. London: John Hamilton, Ltd. Price 5s. net.

Report on the Progress of Civil Aviation, 1932. London: H.M. Stationery Office, W.C.2. Price 5s. net.

Journal of the British Empire Chamber of Commerce in the United States of America. July, 1933. Vol. XIII. No. 6. British Empire Chamber of Commerce in the U.S.A., British Empire Building, 620, Fifth Avenue, New York.

✻ ✻ ✻ ✻

NEW COMPANIES REGISTERED

INTERNATIONAL AIRLINES, LTD.—Capital, £100 in 1s. shares. Operators, proprietors, charterers, and letters on hire of aircraft, airships, motor boats, etc. Directors:—Wm. A. C. Kingham, 35, Hampden Avenue, Beckenham, Kent. Wm. E. Westfield-Stap, "Clovelly," Cosdach Avenue, Wallington, Surrey. Solicitors: Wingfields, Halse & Trustram, 61, Cheap-side, E.C.

MEAD ELECTRIC CO., LTD., 10 The Broadway, Ealing.—Capital, £2,000 in £1 shares. Dealers in electrical, radio engineering and aircraft supplies, etc. Directors:—Albert G. Mead, 22, Newland Gardens, Ealing, N.13, electrical engineer. William Fletcher, 21, Winscombe Crescent, Ealing, N.5 (director of Perry's (Ealing), Ltd.). George F. Perry, "Oakleigh," Great West Road, Heston, Middlesex (director of above company).

✻ ✻ ✻ ✻

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published July 13, 1933
34,867. J. DE LA CIERVA. Aircraft having freely rotative wings. (393,976.)
35,476. A. J. NORTHEY. Rotary i.c. engines. (394,029.)

APPLIED FOR IN 1932

Published July 13, 1933
2,228. BENDIX AVIATION CORPORATION. Internal-combustion engines of the liquid-fuel injection type. (394,048.)
5,613. J. T. SHEVLIN. Manufacture of force-transmitting constructional parts for aircraft. (394,289.)

SECRET PATENTS RE-ASSIGNED TO THE INVENTOR**APPLIED FOR IN 1930**

Published July 13, 1933
16,751. BLACKBURN AEROPLANE AND MOTOR CO., LTD., F. A. BUMPUS and H. J. ANDREWS. Means for carrying and releasing torpedoes, etc., from aircraft. (394,018.)

Personals

PREPAID

(18 words or less 3/6, then 2d. per word).

To be Married.

ROBERTS : MOORE.—The engagement is announced between **FLIGHT-Lt. DAVID NEAL ROBERTS**, youngest son of the late Mr. Edward Roberts, late of The Grange, Bolney, Sussex, and Mrs. Roberts, The Boyne, Maidenhead, Berks, and **RUTH ALMA**, second daughter of Lt.-Col. Harold A. Moore, C.B.E., M.C., and Mrs. Moore, Beechwood, Cookham Dean, Berks.

Married.

CHARLES : MACANDREW.—On Saturday, July 8, 1933, at the Church of SS. Peter and Paul, Little Horsham, Colchester, **GUY PENDRILL CHARLES**, R.A.F., elder son of Dr. C. P. Charles, M.R.C.S., L.R.C.P., and Mr. Charles, Parkstone, Dorset, to **ALEXIS**, younger daughter of the late Mr. Isaac F. Macandrew and Mrs. Macandrew, J.P., Ohiti, Canford Cliffs, Dorset.

Death.

SCHOFIELD.—On July 1, 1933, at the Cotswold Sanatorium, Gloucestershire, **CAPT. CLAUDE SCHOFIELD** (late R.A.F.). "Rest in Peace."

MISCELLANEOUS ADVERTISEMENTS.

Advertisements for this column should arrive at this office by **Monday, 12 o'clock noon.**

Special PREPAID Rates:—

18 WORDS or less, 3/6, then 2d. per word

Display Caps Throughout, 1/6 per line.
Personal Notices, Minimum 3/6, then 2d. per word.
Situations Wanted **ONLY**, 18 words, 1/6.
1½d. per word after.

Box No., 1/- per insertion extra.

PATENTS

STANLEY, POPPLEWELL & FRANCIS, Chartered Patent Agents, 88-90, Chancery Lane, London, W.C.2. Telephone: Holborn 6393. Established 1879. z

F. J. CLEVELAND & CO., Chartered Patent Agents, 29, Southampton Buildings, London, W.C.2. Telephone: Holborn 5875-6. z

KING'S PATENT AGENCY, LTD.—"Advice Handbook" and consultations free.—146A, Queen Victoria Street, London, E.C.4. 'Phone: Central 0682.

A. MATHISEN, B.Sc. Aeronautical Invention Patents, Working Drawings, Exploitation Advice. First Avenue House, High Holborn, W.C.1.

GEE & CO., 51, Chancery Lane, London, W.C.2. Ask for Book on "Patents, Trade Marks," etc.

MAGNETOS

THE EUSTON IGNITION CO., LTD.

OFFICIALLY approved by the Air Ministry for Aircraft Magneto repairs. B.T.H. Service magnetos and spares in stock for immediate release. London: 329, Euston Road, N.W.1. Tel.: Museum 9921. Telegrams: Eusigco, Eusroad. London. Leeds: 117, Park Lane. Tel.: Leeds 26241. Westcliff: 671, London Road. Tel.: Southend 3491. 3-13

INSURANCE

COMPREHENSIVE or Public Liability Competitive Premiums, also Personal Accident.—Full particulars by return, from **DEFENCE LIMITED**, Aviation Department, 40, King William Street, London, E.C.4. Tel.: Mansion House 9944. 6-13

AIRCRAFT UPHOLSTERY

L. A. RUMBOLD AND CO. for Aircraft Furniture upholstered in Elektron and M.G.7. Cabins completely upholstered. Special work quoted.—Kingsgate Place, N.W.6. Tel.: Maida Vale 3772.

SOUTH DOWNS AERO CLUB AT FORD near Bognor.

Excellent aerodrome and hangars, attractive club house, no landing fees. Flying at 50/- per hour. Bathing, tennis, yachting, golf—all within easy reach.

INTERNATIONAL Air Rally & Race LYMPNE AIRPORT, KENT 22nd & 23rd July

Display Including
No. 25 (F) SQUADRON R.A.F.
IN
TIED - TOGETHER AEROBATICS
Gates open 12 noon each day.
Arrival Competition between 12 noon and 12.30 Saturday.

THIS SEASON SPARE PARTS SERVICE FOR JOYRIDING COMPANIES.

All Avro parts, and spares for Le Rhone, Clerget, Mongoose and Lynx engines in stock for immediate dispatch.

AVROS with above types of engines built at short notice.
Repairs and renewals for all types of light aircraft and engines.
Special periodic inspections of aircraft and engines by competent engineers.

**COME TO PENSURST FOR
SPEEDY WORK. SERVICE EXTENDS
24 HOURS A DAY, 7 DAYS A WEEK**
F. J. V. HOLMES,
PENSURST AERODROME, Kent.
Tel.: Penshurst 10.

"OSILITE" TRUNKS & CASES

are lighter, stronger and far more durable than any similar article... They were used on the 1933 Houston-Mt. Everest Expedition
H. J. CAVE & SONS, 81, New Cavendish St.
London, W. Tel.: Welbeck 9032.
ESTD. 1839.

HOTELS

THE GRANGE, Woodley, close Sonning Golf Club, Reading Aerodrome, N.F.S. Flying School, and River, has vacancies. Moderate terms. 3-6

DUBARRY RESTAURANT

3 COURSE lunch 2s., 4 Course dinner 2s. 6d., and à la carte. Morning coffee. Afternoon teas.—214, Piccadilly (opposite Swan & Edgar). Phone: Regent 2640.

AIR TAXIS

AIR TAXIS, LTD., Stag Lane, Aerodrome Edgware. 'Phone: Edgware 0234/5. z

TUITION

THE INTERNATIONAL CORRESPONDENCE SCHOOLS offer sound instruction in **Aeroplane Design**, Fitting and Rigging, and Aero-Engine Fitting and Rigging; also expert training for Ground Engineers (Categories A, B, C and D). All instruction is by correspondence. Write to-day for our "Aeronautical Engineering" Booklet.—**INTERNATIONAL CORRESPONDENCE SCHOOLS, LTD.**, Dept. 182, International Buildings, Kingsway, London, W.C.2. 2-26

IMPORTANT.

MANY QUALIFIED "B" Licence Pilots can obtain Positions in the future if they hold the Air Ministry's Wireless Licence. Pilots who intend taking up Flying as a career should first train for the Air Wireless Licence.

The recognised Training Centre, with all the necessary equipment, is **THE LONDON TELEGRAPH TRAINING COLLEGE LIMITED** (Founded 1896), of 20, Penywern Road, Earl's Court, London. Telephone, FLAXman 8721. 5-13

AIRCRAFT CAMERAS

"EAGLE" AIRCRAFT CAMERAS and equipment for survey photography and Naval and Military requirements. Specialists in Air Photographic Apparatus. Hand Held Cameras.—Pistol Cameras for air snapshots. Full particulars from Manufacturers and Patentees.—**WILLIAMSON MANUFACTURING CO., LTD.**, Litchfield Gardens, Willesden Green, London, N.W.10. 'Phone: Willesden 0073-4. Contractors to Air Ministry, Admiralty, War Office, Colonial and Foreign Governments. z

AERIAL PHOTOGRAPHERS

AEROFILMS, LTD. Air Surveys—Aerial Photos taken of Factories, Estates, Aircraft in Flight, etc. Library of 35,000 Air Views.—Bush House, Aldwych, W.C.2. Telephones: Temple Bar 2164, 2165; and Showroom at Heston Airport.

AIR SURVEY

AIR SURVEY CO., LTD., Hayes, Middlesex, Telephone: 632 Hayes, Mdix. India Branch. Dum Dum, Calcutta. z

MODELS AND PARTS

A. E. JONES, LTD.
The Original House for Model Aeroplanes and Accessories. Quality always of the highest standard. Price list free.—97, New Oxford Street, London, W.C.1. Tel.: Temple Bar 6350.

WINDSOR and Mersey Model Aero Clubs. Genuine Members Wanted.—The only Club in Manchester with a Clubroom.—"THE BLIMP," 76a, High Lane, Chorlton-cum-Hardy, Manchester.

MODEL AIRCRAFT KITS.

THE MODEL AIRCRAFT STORES,
133, Richmond Park Rd., Bournemouth.
For all Materials, Blueprints, Kits, Rubber, Propellers, etc. Write for Lists.

"AIRCRAFT"

AUSTRALIA.

1s. Monthly.

Oldest Aviation Journal in the Southern Hemisphere. Covers every phase of aeronautical progress in Australasia. An excellent advertising medium for aircraft and accessories manufacturers. Advertising rates obtainable at
92, FLEET STREET, LONDON, E.C.4.

SAFETY FIRST

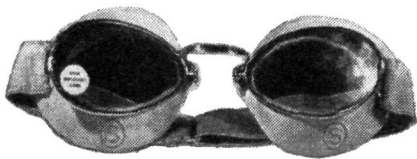
SALTER'S SPRINGS

GEO. SALTER & CO., LTD.,
WEST BROMWICH.

ENSURE RELIABILITY

CLOTHING

S. LEWIS'S famous High Speed Racing or Flying Goggles, large rubber cups, safety lenses, 30/- per pair.

**A PERFECT GOGGLE.**

White Zip Flying Suits, 22/-, 25/-, 27/6. Flying Helmets to match, 9/6. In Best Quality Leather Rubber Phone Pads, 15/-; Phone D.H. 9/-; cheaper pattern, 6/-. Featherweight Goggles, Triplex Lenses, 5/6, 6/6, 7/6. Leather Flying Jackets, Zip, 37/6, 45/-; 50 Luxor Goggles, No. 10, 50/-; No. 4, 40/-; No. 6, 77/6.

Discounts to Club Members and Air Force Pilots
No connection with any other Firm.

Contractors to Colonial and Foreign Governments.

TRADE SUPPLIED.

S. LEWIS'S

Flying, Racing and Motor Clothing Fame,
27, Carburton Street, London, W.1.
Museum 4793.

WAINWRIGHT'S FLYING HELMETS

Air Ministry Pattern, Lined Chamois, Sorbo Padded Earphone Pouches, 18/6. Earphones, 7s. 6d. Triplex Goggles, 4/6. Special offer: Complete set, comprising Helmet, Earphones and Goggles, as above, 27/6.

SUMMER EQUIPMENT.

White or Fawn Drill Flying Helmets, Sorbo padded earphone pouches, 7/6 and 9/6. White Flying Suits, full length Zip fasteners, 25/-; Black or Tan Leather Jackets, knitted collar, cuffs and waist, lined silk, full length Zip fastener, 37/6.

AIR-TIGHT RACING GOGGLES.

Rubber-rimmed eyepieces, curved lenses, adjustable nose-pieces, 6/6; Triplex lenses, 12/6; Ditto Triplex with large moulded rubber cups, 21/-; R.A.F. pattern lightweight with rubber-rimmed eyepieces, unsplinterable lenses, 6/6.

10% Discount to R.A.F. and Club Members.

WAINWRIGHT, 300-302, EUSTON ROAD,
LONDON, N.W.1.
Telephone: Museum 6280.

AERONAUTICAL ENGINEERING

AERONAUTICAL ENGINEERING TRAINING
providing complete practical Works and Aerodrome experience for administrative side of Civil and Commercial Aviation. Students accepted in first instance for probationary term only. Day and Residential

Syllabus from

THE COLLEGE OF AERONAUTICAL ENGINEERING
Chelms, S.W.3.

FIVE FIRST PLACES.**A REMARKABLE ACHIEVEMENT.**

At the Associate Membership Examination of The Royal Aeronautical Society, held in December, 1932, students of The T.I.G.B. gained **FIVE FIRST PLACES** in their respective subjects, and also **FIRST PLACE** in the whole Exam.

The T.I.G.B. is the only Institution of its kind approved by The Society.

Write to-day for "The Engineer's Guide to Success"—144 pages—Free—which gives full particulars of The T.I.G.B. Courses in Aeronautics, contains the widest choice of engineering courses in the world, and shows you how to qualify for A.F.R.Ae.S., Air Ministry Licences, A.M.I.Mech.E., A.M.I.E.E., etc. The T.I.G.B. guarantees training until successful.

THE TECHNOLOGICAL INSTITUTE OF GREAT BRITAIN,

37, Temple Bar House, London, E.C.4.
(Founded 1917. 19,000 Successes.)

FOR SALE

FLOATS FOR SALE, suitable for Moth or other aircraft of an all-up weight of 1,540 lb. Guaranteed new and unused. Exceptional opportunity to secure these floats at under cost price.—**SHORT BROS., LTD.,** Seaplane Works, Rochester, Kent. z
LONDON & PROVINCIAL AVIATION CO., 3, Thackeray Street, London, W.8. The Aviation Shop (BEHIND BARKERS). For all aviation requirements.

MISCELLANEOUS

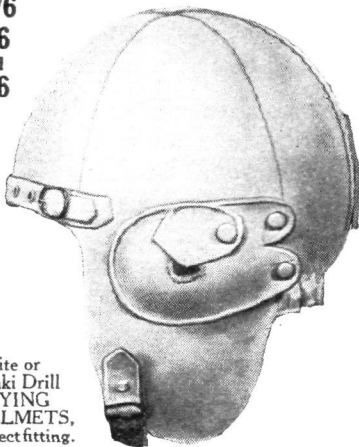
COLLECTION AERONAUTICAL BOOKS, ETC., wanted and for Sale.—**PIKE, 102, Clapham Road, London, S.W.9.**

D. LEWIS

LTD.

10 per cent. Discount allowed to
R.A.F. Officers and
Club Members.

10/6
8/6
and
6/6



White or
Khaki Drill
FLYING
HELMETS,
perfect fitting.

FLYING HELMETS, Air Ministry pattern, best chrome leather, black or tan, chamois lined, sorbo padded 'phone pockets, 15/- & 22/6
EARPHONES, flat type, chromium plated ... 7/6
GOGGLES, Triplex, with sponge rubber pads, 7/6, 15/- & 25/-
LUXOR GOGGLES, flat Triplex 40/- & 50/-
Ditto, with large curved lenses ... 77/6
WHITE OR KHAKI FLYING SUITS, Zip fastener ... 25/- & 30/-
Button fronts ... 21/-
LEATHER COATS, R.A.F. pattern, chrome leather, fleece lined ... 135/-
Slightly soiled ... 63/-
COMBINATION FLYING SUITS, fur collar, 60/-; also models with Zip fasteners.
SHEEPSKIN FLYING BOOTS, lambswool lined, with Zip fastener ... 47/6
Thigh high ... 84/-
SUEDE or LEATHER JACKETS, full length, open-ended Zip ... 37/6

WRITE FOR FULLY ILLUSTRATED CATALOGUE POST FREE.
(No discount allowed on Luxor Goggles)
ACTUAL MANUFACTURERS. TRADE SUPPLIED—WRITE FOR QUOTATIONS.

D. LEWIS, LTD.

(Dept. F.)

124, GT. PORTLAND ST.
LONDON, W.1.

Tel. Museum 4314. Tel. Aviakit, Wesdo, London.

Sole Agents for Belgium and Northern France:
Societa "Aera," Aerodrome der Deurne-Antwerp.
Sole Agents for Holland and the Dutch Colonies;
E. PELGER, Prinsestratt 33 & 35, Den Haag.

Before

**renewing the C. of A.
renew with**

WELLWORTHY
PISTON RINGS

"The Choice of the Expert"

WELLWORTHY LTD., Piston Ring Specialists, London, Birmingham & Lynton.
Service Depots—London: 89, Blackfriars Road, S.E.1. Midlands: Wellworthy House, Suffolk Street, Birmingham.

LIBERTY ENGINE

DYNAMOS 6v. 15 amps., reduction gear box attachment, Price 5s. carr. fwd. Coley Thermometers, Aircraft Instruments, and AVRO 504K. Spares, etc.

COLEY & ATKINSON, LTD.

ORDNANCE WORKS, KINGSTON-ON-THAMES.

MACHINES & ENGINES FOR SALE

HENLYS LTD.
for
AVRO CADETS.

£250

CIRRUS III AVIAN.—10 months' C. of A. Standard equipment. Compass. Excellent condition.

£350

HERMES II METAL AVIAN.—12 months' C. of A. Doughnut wheels. Slots. Compass. Triplex windscreen.

£375

GIPSY I MOTH.—Compass. Slots. 12 months' C. of A. Repainted. Appearance as new.

May we send you our latest list of secondhand aircraft?

Heston Airport, Hounslow, Middx.
Phone: Hayes 410.

Woodford Aerodrome, Manchester.
Phone: Bramhall 63.

PHILLIPS & POWIS AIRCRAFT (READING) LTD.

SOLE DISTRIBUTORS OF
DE HAVILLAND AIRCRAFT
FOR THE MIDLANDS.

Prompt Deliveries.

Deferred Terms

Exchanges.

Offer the following aircraft:—

£185

WESTLAND WIDGEON.—New C. of A. 28 hrs. since engine top overhaul.

£260

AVRO AVIAN HERMES.—Completely overhauled. 12 months' C. of A.

£280

AVRO AVIAN CIRRUS III.—Hours flown since new, 270. Just completely overhauled and modified up to date. 12 months' C. of A. Compass.

£325

GIPSY I MOTH, Wooden.—Special faired-in fuselage and small centre section tank. Extra tank. C. of A. Jan./34. Engine modified and completely overhauled. High cruising speed.

READING AERODROME. SONNING 114/5

**NORMAN EDGAR
BRISTOL AIRPORT**

Telephone: 41133.



WANTED



SEVERAL CIRRUS II MOTHS,
GIPSY I MOTHS and PUSS MOTHS.
Must be in excellent condition. Send full details.

Sole De Havilland Agents for
West of England and South Wales.

Travel by the Bristol-Cardiff Air Ferry
when in the West

AIRCRAFT WANTED

WANTED for Cash.—Fox Moth or Puss Moth, in good condition.—Box No. 4108, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

WANTED by Private Owner.—Light Aeroplane in good condition. Avian, Bluebird, Redwing or Moth. Send full particulars and lowest price for cash to—Box No. 4109, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

WANTED to Purchase, cheap aircraft, must have C. of A.; state price and full particulars.—H. POSKITT, Balne, nr. Goole.

SECOND-HAND Glider or Sailplane, Autotow or Two-seater preferred.—143, Stokesley Crescent, Billingham.

Kindly mention "Flight" when corresponding with advertisers.



AIR SERVICE TRAINING LIMITED

"BRITAIN'S AIR UNIVERSITY"

The low cost of the A.S.T. Courses is not generally realised. For example, the cost of the long Course, including the Blind Flying Course and Ground Instruction for all the Air Ministry licences is at the rate of only £2.16.8 per flying hour

Particulars from

THE SCHOOL COMMANDANT, A.S.T. LTD., HAMBLE, SOUTHAMPTON

AST69

SCHOOLS

THE DE HAVILLAND SCHOOL OF FLYING,
HATFIELD AERODROME, HERTS,
OFFERS EXPERT TUITION, every comfort,
licensed restaurant, pleasant surroundings, a fine
aerodrome, and individual attention. Trial lesson
by appointment. Telephone, Hatfield 250. z

FLYING INSTRUCTION.—Trial Lesson, 10s. 6d.
Dual, 37s. 6d. per hour. Solo, 27s. 6d. per
hour.—THE HAMPSHIRE AEROPLANE CLUB, South-
ampton. Phone: Eastleigh 170.

PHILLIPS & POWIS SCHOOL OF FLYING
England's Most Popular School. No Entrance
Fee. No subscriptions. Five Moths. Experienced
Instructors. Trial lessons 15/-. Learn to Fly
quickly and cheaply at Reading Aerodrome. Son-
ning 114.

GRAVESEND SCHOOL OF FLYING

For expert commercial tuition
in all Branches.

GRAVESEND AERODROME, KENT.
Tel.: 1400/1.

EAST ANGLIAN AERO CLUB

★ C.F.S. INSTRUCTORS ★
Advanced Dual Aerobatics

FULLY LICENSED CLUB.
LONDON'S NEAREST AERODROME.
ABRIDGE (Nr. LOUGHTON), ESSEX
Phone: Theydon Bois 224.

£ 1:1:0 ALL MEALS, BATH & BEDROOM. NORFOLK & NORWICH
WEEK-END
IN BROADLAND

SITUATIONS WANTED

YOUNG MAN (23) very interested in aviation
requires situation. Inexperienced, but will
consider anything. anywhere.—Wood, 117, Cedar
Road, Croydon.

JUNIOR DRAUGHTSMAN, 19, requires employ-
ment with Aircraft manufacturers. Technical
school education, two years' drawing office experience.
Would consider any situation with prospects of
gaining further technical knowledge.—Geo. PARKES,
Winholme Thorpe Road, Staines, Middlesex.

AERONAUTICAL ENGINEER, B.Sc. (McGill
University), M.Sc. (Massachusetts Institute
Technology). British subject, age 27, single. Fully
qualified in aeroplane design and stress analysis.
Draughting experience. Available immediately.—
Box No. 4110, c/o FLIGHT, 36, Great Queen Street,
Kingsway, London, W.C.2.

SITUATIONS VACANT

SENIOR DRAUGHTSMEN for Aeronautical
Work. Full details of experience, age and
salary required, to Box No. 4107, c/o FLIGHT, 36,
Great Queen Street, Kingsway, London, W.C.2.

G.E. REQUIRED for Joy-riding. "A" and
"C" on Clerget Avro.—Phone:
Witney 170.

CARDIFF AIR PAGEANT

Entries are invited for the
**LONDON - CARDIFF
AIR RACE**

Entry forms to
The Secretary, Cardiff Aerodrome.
Dinner and Dance arranged for evening,
and Golf Tournament at Royal Porthcawl
Golf Club on Sunday.
VISITING PILOTS WELCOME

AVIATION BOOKS

- "Airsense," By W. O. MANNING, F.R.Ae.S. ... 3/9
Post Free
- "Scale Model Aircraft," By JAMES H. STEVENS ... 5/6
Post Free
- "Simplified Aerial Navigation," By J. A. McMULLEN, M.B.E. ... 5/6
Post Free
- "The Autogiro and How to Fly It," By REGINALD BRIE ... 5/6
Post Free
- "Fly with Me," By CAPTAIN H. DUNCAN DAVIS, A.F.C., AND C. SPRIGGS ... 5/6
Post Free
- "Britain's Air Peril," By MAJOR C. C. TURNER, A.F.R.Ae.S. ... 5/6
Post Free
- "Gliding and Sail Planing," By STAMER & LIPPISCH ... 5/6
Post Free
- "Book of the Autogiro," By C. J. SANDERS and A. RAWSON ... 5/6
- "The Pictorial Flying Course," By FL.-LT. SCHOFIELD & F.-O. JOHNS ... 5/6
(Upwards 250 illustrations) Post Free
- "Fighting Planes and Aces," By W. E. JOHNS ... 5/6
Post Free
- "The Aeronautical Ground Engineer's "A" and "B" Licences," By CAPT. S. L. COLLINS ... 8/-
Post Free
- "War in the Air, 1936," By MAJOR HELDERS ... 8/-
Post Free
- "Camels are Coming," By W. E. JOHNS ... 8/-
Post Free

- "Death in the Air," The War Diary and Photographs of a Flying Corps Pilot. 9/-
Post Free
- "Aeronautical Engineering Materials" (Vol. III), By J. D. HADDON, B.Sc. ... 9/-
Post Free
- "A B C of Flight," By W. LAURENCE LE PAGE ... 10/-
Post Free
- "Aero Engines," (75 Illustrations) By JOHN D. FRIER, A.B.C.Sc., &c. ... 10/6
Post Free
- "The Light Aeroplane Manual," By F. D. BRADBROOKE ... 11/-
Post Free
- "Recollections of an Airman," By LT.-COL. STRANGE, D.S.O., &c. ... 11/-
Post Free
- "Light Aero Engines," By C. F. CAUNTER ... 13/-
Post Free
- "Blind Flight in Theory and Practice," By OCKER AND CRANE ... 15/6
Post Free
- "The Two-Cycle Engine," By C. F. CAUNTER ... 15/9
Post Free
- "Metal Aircraft Construction," By M. LANGLEY ... 15/9
- "High Speed and Other Flights," By FLIGHT-LIEUT. H. M. SCHOFIELD ... 15/9
Post Free
- "Materials of Aircraft Construc- tion," By E. I. HILL, F.R.Ae.S., &c. ... 20/9
Post Free
- "A Complete Course for the Commercial Flying Licence" By CAPT. W. L. HOPE AND NORMAN W. KENNEDY ... 21/9
Post Free
- "Airplane Pilot's Manual," By ROSS MAHACHEK ... 21/9
(Illustrated). Post Free
- "Aeroplane Structural Design," By JONES & FRIER ... 21/9
Post Free
- "Modern Aircraft," By MAJOR VICTOR W. PAGE ... 21/9
Post Free
- "Kronfeld on Gliding and Soaring," ROBERT KRONFELD ... 21/9
Post Free
- "The Air Annual of the British Empire, 1932-33." ... 21/9
Post Free
- "Handbook of Aeronautics," Published under the Authority of the Council of the Royal Aeronautical Society. ... 25/9
Post Free
- "International Air Guide," 2 Vols. in English, French and German. Profusely illustrated with maps. ... 56/3
Post Free

The above obtainable upon application to:

"FLIGHT" Office,
36, Great Queen Street, Kingsway, W.C.2.

Save time by using the Air Mail.



YOU WILL FIND OUR
**AEROPLANE
COMPONENTS**
ARE FITTED TO NEARLY
ALL THE FIRST-CLASS
MACHINES.
MAY WE SUPPLY YOU?

RUBERY, OWEN & Co.

DARLASTON,

SOUTH STAFFS.

PHONE: DARLASTON 130.

"FLIGHT" POSTCARDS

ACTUAL PHOTOGRAPHS

Machines of the R.F.C., R.N.A.S., and R.A.F.

Armstrong Whitworth "Atlas"	Fairey "III F." Seaplane	Martinsyde F.4
Armstrong Whitworth "Siskin"	Fairey "Flycatcher"	Maurice Farman
Avro "Bison"	Fairey "Fox"	"Longhorn"
Avro 504K	Fairey "Gordon"	Maurice Farman
Avro "Lynx"	Fairey Long Range Monoplane	"Shorthorn"
Avro "Tutor"	F.E.2-B	Nieuport 1½ "Plane"
B.E. 2C.	Flying Boat F.3	R.E.8
B.E. 12	Flying Boat F.5	S.E. V
Blackburn "Dart"	Gloster "Gamecock"	Spad
Blackburn "Iris III"	Gloster "Grebe"	Short 225
Blackburn "Iris V"	Handley Page	Short "Rangoon"
Blackburn "Kangaroo"	"Heyford"	Short "R 6/28"
Blackburn "Ripon"	Handley Page "Hinaidi"	Sopwith "Camel"
Boulton & Paul	Handley Page "Hyderabad"	Sopwith "Dolphin"
"Sidstrand"	Handley Page 0/400	Sopwith "Pup"
Bristol "Bulldog"	Hawker "Audax"	Sopwith "Salamander"
Bristol "Fighter"	Hawker "Demon"	Sopwith "Snipe"
Bristol "Scout"	Hawker "Fury"	Sopwith 1½ Strutter
De Havilland D.H.1	Hawker "Hart"	Vickers "Gun Bus"
De Havilland D.H.2	Hawker "Horsley"	Vickers "Vernon"
De Havilland D.H.4	Hawker "Torpedo"	Vickers "Victoria"
De Havilland D.H.5	Horsley	Vickers "Vimy"
De Havilland D.H.6	Hawker "Nimrod"	Vickers "Virginia"
De Havilland D.H.9	Hawker "Osprey"	Vickers "Vildebeeste"
De Havilland D.H.9a	Hawker "Tomtit"	Vickers-Supermarine
De Havilland "Tiger Moth."	Hawker "Woodcock"	S.6.B.
Fairey III-D	Henry Farman	Vickers-Supermarine
Fairey III-F	Martinsyde F.1	"Southampton"
	Martinsyde F.3	Westland "Wapiti."

Single Cards 6d. each, post free.

Six or more Cards 4d. each, post free. } Cash with order.

"FLIGHT" Office,
36, Great Queen St., Kingsway, W.C.2
Telephones: Holborn 3211 & 1884.

"FLIGHT" PHOTOGRAPHS

(Copyright).

BLACK AND WHITE, GLOSSY,
UNMOUNTED:—

6½ × 4½ ...	1/6	12 × 10 ...	4/6
8½ × 6½ ...	2/6	20 × 16 ...	10/6
10 × 8 ...	3/6		

DOUBLE THICKNESS, CREAM BASE, SEPIA
TONED, UNMOUNTED:—

10 × 8 ...	6/-	20 × 16 ...	21/-
12 × 10 ...	7/6		

HAND COLOURED, IN OILS (GREY MOUNT):—
20 × 15 (MOUNT 24 × 19) ... 31/6

FLIGHT Office,
36, Great Queen Street,
Kingsway, London, W.C.2.
Holborn 3211 and 1884.

Send
for:



LARGER and more comprehensive and useful than ever, correctly describes the new (third) edition—enlarged to 60 pages, with numerous illustrations. Not merely a catalogue, but a unique, practical and authoritative text book (with a catalogue of Hoyt Metal attached), and one which no engineer should be without.

Enclose 3d. to cover postage, packing, etc.

HOYT
ANTI-FRICTION
(WHITE) METALS

NUMBER ELEVEN

MOST DEPENDABLE — MOST DURABLE.
IN LARGEST USE FOR AERO ENGINES.

Other Grades for all requirements.
HOYT METAL CO., LTD., DEODAR RD., LONDON, S.W.15.
Telegrams: "Profanity," Phone, London.

DICKSON GLIDER

Complete Sets of Working Drawings (Blue Prints) in great detail. The machine has been considerably redesigned. Strength and durability improved without increase in weight.

CHEAPER AND EASIER TO CONSTRUCT.

Price 30/-

"FLIGHT" Office,
36, Great Queen Street,
Kingsway, W.C.2.

Kindly mention "Flight" when corresponding with advertisers.

OVER MOUNT EVEREST



Photo by kind permission of "The Times" Newspaper.

Westland Aircraft fitted with wooden Airscrews.



Telephone:

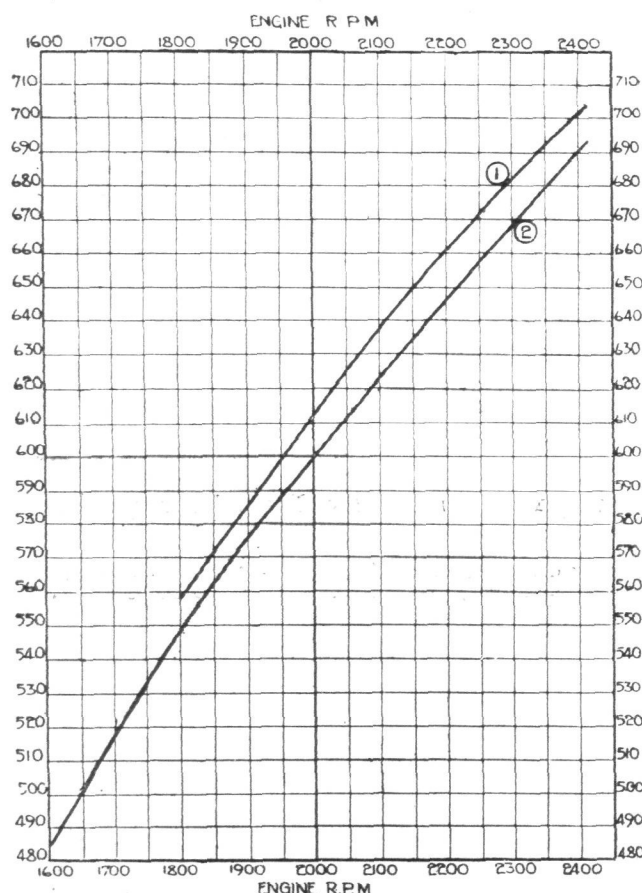
Weybridge 705.

Save time by using the Air Mail.

"Bristol"

50 Hours at Full Throttle and Maximum Speed.

A Striking Demonstration of the Efficiency of the Pegasus Engine.



PEGASUS II-L ENGINE. P.6001.
50 HRS. FULL THROTTLE HIGH SPEED DEVELOPMENT TEST.

- ① POWER CURVE AT COMMENCEMENT OF TEST
 ② POWER CURVE AT CONCLUSION OF 50 HRS. FULL THROTTLE TEST AT 2300 R.P.M.

APPROVED *W. H. Underwood* 1/2 A.I.D. ENGINES DATE 10 6:33 PM 36116

A "Bristol" Pegasus "L" engine was recently subjected to a 50 hours' full throttle high speed test, developing 680 B.H.P. and running at 2,300 r.p.m. throughout, a speed of revolution 15 per cent. in excess of the rated speed. The conditions of the test were made more rigorous by the high temperature of the oil fed to the engine, which was not allowed to drop below 80° Centigrade.

Despite these severe conditions the engine ran consistently well with a negligible drop in power throughout, and a comparison of the calibration curves taken before and immediately after the test show that the drop was under 2 per cent. It is of interest that the engine, prior to reconditioning for this test, had completed approximately 500 hours running on the bench and in flight, including two official type tests and a one hundred hours' flight test in a seaplane.

This test was in accordance with the "Bristol" practice of submitting engines of each new series to a full throttle development test, believing that whereas the present standard Air Ministry type test forms a useful basis for establishing the relative performance and reliability of new types, an engine when fully developed should stand up to something more strenuous in order to ensure an ample margin of reserve.

THE BRISTOL AEROPLANE CO., LTD.—FILTON, BRISTOL.